THE IRON TRADE REVIEW

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NEW RECORD

IS MADE IN PRODUCTION BY BLAST FURNACES.

Pig Iron Market Very Quiet, but There is No Weakness.—New Business in Finished Lines Not Large.

A new record in blast furnace production was made last month, our statistics showing an output of 2,291,030 tons, an increase of 64,322 tons as compared with April. The daily production was not, however, quite so heavy on account of April being a short month, the production for May being 73,904 tons daily, against 74,223 tons in April. The large number of furnaces in blast on the last day of May indicates a continuance of the heavy production.

Few Pig Iron Sales

The country is having little difficulty in consuming the immense product of blast furnaces, and also a considerable amount of foreign iron, though the latter is not expected to be such an important factor after the cargoes already shipped are disposed of. The market is extremely quiet, but there are still no signs of weakness, and furnaces are making no effort to urge buyers to come into the market. It seems probable that there will be a shortage of steel-making irons in the central west, and it is known that some very large companies melting foundry iron have not yet covered for their full requirements for the present year. In some centers there is considerably more interest manifested in deliveries for the first quarter of next year, but sales are not large.

The Coke Market

In the Cleveland district, there has been marked improvement in the coke market, with heavy sales and higher prices. There is also considerable activity in Cincinnati, but in other centers the weakness which has continued for a month or more still prevails. The production in the coke regions is very large and the railroads are giving good service.

Railroad Purchases

The most important purchase of railway equipment was 6,000 cars for the Steel Corporation, 2,000 for the C., B. & Q., and 1,000 for the Chicago & Great Western. Fully 90,000 tons of steel material will be required for the Corporation cars. A shortage in specifications on car contracts is noted in the Chicago district. An order for 1,700 tons of shapes to be used by the Chicago & Northwestern in track elevation has been placed, and 24 grade crossings are to be abolished at Buffalo.

Finished Material

The demand for structural material is not strong at present and orders are usually for tonnages not exceeding 500. In spite of the general dullness of the finished material market, the large number of contracts recently made at full prices show that there is no weakness, the decrease in business being attributed to unwillingness of buyers to make contracts for deliveries beyond the time at which deliveries can now be guaranteed.

Rail Sales

The Lackawanna Steel Co. announces the sale of 30,000 tons of rails for this year's delivery to the Grand Trunk. The leading interest has taken 4,000 tons for the Cincinnati, Hamilton & Dayton, 3,000 tons for miscellaneous trolley roads, 6,000 tons for the Wisconsin Central, 4,600 for the Arkansas, Louisiana & Gulf, and 40,000 for the Chicago & Northwestern. Other interests have taken 10,000 tons for the Central of Georgia, and 4,000 for a Pittsburg trolley.

RECEIVERS APPOINTED

For Milliken Bros., Inc.—Embarrassed On Account of Lack of Working Capital.

New York, June 12.—On the petition of four creditors, Milliken Bros., Inc., with offices at 11 Broadway, New York, were placed in bankruptcy late in the afternoon of June 10. Assets are estimated at about $8,000,000, with liabilities of about $6,500,000, of which $3,000,000 is in bonds secured by mortgage on the steel plant at Mariners' Harbor, Staten Island. The appointment of the following temporary receivers is announced: J. Van Vechten Olcott, lawyer, member of congress and director in the Southern Coal & Iron Co. and other concerns; William L. Ward and August Heckscher, vice president of the Eastern Steel Co., and director in many manufacturing enterprises. These are to furnish a joint bond of $500,000. They are to serve for 30 days and to continue indefinitely if the creditors so request and if the plant is operated at a profit. They are authorized to borrow $200,000 to continue work now under way.

From all that can be learned, it appears that the failure was due entirely to inadequate working capital, the result in turn of the tight money market which precluded relief when it was found that the building of the great works involved an amount largely in excess of the estimates. Coupled with this was the fact that the company had a considerable amount tied up in a number of construction enterprises about the city, as it had catered largely to the New York structural market.

The petition in bankruptcy was filed by attorneys representing the following creditors: Niles-Bement-Pond Co., $11,628; Snyder & Black, $403; John A. Roebling's Sons Co., $2,950; and Robert W. Hunt & Co., $923. It was deemed wisest by the company to accede to this request, with the idea of holding the business together under the direction of the court, and after formal application was made, the matter was argued before Judge Holt of the United States District court in chambers at the Bar Association in the evening. This, it is stated, was in keeping with the course settled upon by the directors of the company at a meeting Saturday. A plan for

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THE WEEK IN IRON CENTERS.

PITTSBURG

Little Selling of Pig Iron—Only Activity is in Steel Bars.

Office of THE IRON TRADE REVIEW.
521 Park Bldg., June 12.

The market during the past week has been quiet as far as new business is concerned, with the single exception of steel bars. Prices all along the line, aside from coke and scrap, have been well maintained and not a single weak feature has been presented. The let-up in finished lines has been by comparison only. The mills are filled up practically throughout the last half of the year, with the exception of shapes, and the only uncertainty presented during the week under review has been in regard to tin plate. This latter condition is brought about by the uncertainty as to crop conditions due to the frost reports, and while heavy tonnages of tin plate are on the books, unfavorable reports from the farming districts would inevitably result in contracts not being specified, which would practically mean a cancellation of a large part of the tin plate business. From a few of the districts, reported as particularly hard hit by frost and cold weather, very encouraging news has been received, and from reports at hand it may be said without exaggeration that reports of the crop failures have been greatly magnified. The rail business is another that has been light during the past week, but, as stated last week, this is due to an inclination to wait until after the joint meeting of the American Railways Association and representatives of the rail making concerns, which will be held within the next month, and at which meeting the contentions of both sides will be presented and an effort made to arrive at a satisfactory adjustment of difficulties.

Pig Iron.—Aside from a few small lots of foundry iron for spot shipment there has been no movement in pig iron in this district during the week and the inquiry has been very light. There is a report that one of the Westinghouse interests during the week purchased 1,000 tons No. 2 foundry for first quarter delivery at a very low figure, but this has not been verified. It is also reported that a Toledo furnace sold 500 tons first quarter Bessemer at $21 furnace for western shipment. Southern furnaces report little or no inquiry for prompt deliveries and are out of the market on prompt iron. Northern No. 2 foundry is quoted $25 to $26 valley, and Bessemer $23.50 to $24. Forge iron for last half is quoted $22 to $22.50 furnace. On last half deliveries we quote as follows:

Bessemer, Valley	$23.50 to 24.00
Bessemer, Pittsburg	24.40 to 24.90
No. 1 Foundry, Pittsburg	23.90 to 24.40
No. 2 Foundry, Pittsburg	23.90 to 24.40
Gray Forge, Pittsburg	22.90 to 23.40
Basic, Valley	23.50 to 24.00
Basic, Pittsburg	24.40 to 24.90

Ferro-Manganese.—During the past week one lot of two carloads ferro-manganese foreign 80 per cent sold at $66 Baltimore for spot delivery. There has been but little inquiry in the market and for third and fourth quarter deliveries we quote $63 to $64 Baltimore, and for prompt shipment $64 to $65 Baltimore.

Imported 50 per cent ferro-silicon is quoted $110 Pittsburg; domestic 12 per cent, $36; 11 per cent, $35c; 10 per cent, $34; with the lower grades imported ferro-silicon, $1 higher.

Plates.—The plate market is quiet, as it has been for some time past, due to the filled up condition of the mills and their inability to make anything like prompt deliveries. The big feature in the plate market during the week has been the placing by subsidiary companies of the United States Steel Corporation of 6,000 cars for inter-mill service, this contract alone calling for about 90,000 tons material, including plates, small shapes, axles, etc. Specifications against contracts are very heavy, and we quote as follows:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.80c to 1.90c f. o. b. mill Pittsburg for prompt shipment, and 1.70c base Pittsburg on future deliveries. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c. A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than four inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1.00c.. Gages under ¼-inch to and including 3-16-inch plate on thin edges, 0.10c; under 3-16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—Specifications have not shown any material falling off. New business at the present time is light, but sheet makers have been booking last half business for the past four or five weeks, and there is comparatively little more to be closed, as but few of the manufacturers have not covered for their requirements for this period. The jobbers will be in the market from time to time on account of their shorter contract period. Prices are unchanged and we quote as follows:

Black steel sheets one pass, cold rolled, Nos. 11-12, 2.20c; Nos. 13-14, 2.25c; Nos. 15-16, 2.30c; Nos. 17-21, 2.35c; Nos. 22-24, 2.40c; Nos. 25-26, 2.45c; No. 27, 2.50c; No. 28, 2.60c; No. 29, 2.75c; No. 30, 2.85c; galvanized, Nos. 10-11, 2.65c; Nos. 12-14, 2.75c; Nos. 15-16, 2.85c; Nos. 17-21, 3.00c; Nos. 22-24, 3.15c; Nos. 25-26, 3.35c; No. 27, 3.55c; No. 28, 3.75c; No. 29, 4.00c; No. 30, 4.25c. Corrugated roofing, $1.85 per square for No. 28 painted, 2½-inch corrugation, and $3.25 per square No. 28.

Tin Plate.—The situation regarding tin plate is still problematical and will be until canners feel more satisfied as to crop conditions. Reports from the canning districts are getting better from week to week, but they still do not feel warranted in going ahead. While most of this canning business has been contracted for, an unfavorable crop report would have great bearing on the specifications taken out by canners.

Coke tin plate 100-pound basis, 14 x 20, $3.90 f. o. b. mill, Pittsburg district. Terms, 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—Both inquiry and new tonnage on standard sections have been light as far as local mills are concerned during the past week. The new business has been about normal on light rails, and the inquiry has been heavy. The Pennsylvania lines, although they announced their contemplated 1908 requirements some time ago, have not sent specifications to local mills. The demand for standard spikes is not so strong as it was six weeks ago, and prompt business can now be placed at $2.40, and future at $2.30 to $2.35 Pittsburg. Hand spikes are very

scarce, and $2.50 base Pittsburg is quoted. We quote as follows:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $40; 12-pound, $36 to $37; 16-pound, $35 to $36; 20-pound, $34 to $35; 25 to 45-pound, $33 to $34; angle splice bars for standard sections, $1.65; standard spikes for forward deliveries, $2.30 to $2.35 Pittsburg; hand spikes, $2.50 Pittsburg.

Hoops, Bands and Cotton Ties.—On bands the buying movement has been on since May 1 for the last half of the present year and the first half of next, and old contracts are fully specified to date. The new contracts by coopers have not yet begun to come in, but this interest is specifying very heavily. The cotton tie market is very quiet.

Hoops in carload lots, 2c; in less than carload lots, 2.10c; bands, 1.60c; base half extras as per standard steel. Cotton ties, 95½c per bundle.

Steel.—With at least two of the large shape mills selling steel in the shape of billets at present market prices instead of selling its finished material, the market has eased off to a small extent, and the supply is a little better, although prices have been maintained. Soft Bessemer billets are quoted nominally $30.50 to $31 Pittsburg, and open-hearth billets $32 Pittsburg. Sheet bars are quoted nominally $31.

Merchant Bars.—There has been some very heavy buying of steel bars during the week under review, and it is estimated that about two-thirds of the estimated requirements of the implement interests have been covered. The bar iron movement has been nothing out of the ordinary and we quote nominal price of 1.75c to 1.80c Pittsburg deliveries, and 1.60c Pittsburg plus freight to point of shipment for western deliveries. We quote as follows:

Common iron bars, 1.75c to 1.80c Pittsburg in carload lots and over, 1.80c to 1.85c in less than carloads; Bessemer steel bars, 1.60c net, for forward deliveries; 1.85c to 1.90c out of stock; plow and cultivator, 1.60c net; channels, angles, zees, tees, under three inches, 1.70c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 50 per cent off in carload lots, and 5 per cent off in less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. The price of planished and machine straightened tire is 1.80c, base, half tire extras. Iron finished tire up to 1½ inch and over to be sold on regular bar basis of 1.60c base, half extras, steel card.

Structural Material.—Shapes are the one quiet factor in finished lines, and the new business being placed with the mills has been light. Inquiries for construction work have been slow and aside from railroad bridge work have been for small tonnages. Mill promises on the large sizes are unusually prompt, and on the small medium sizes fair. We quote as follows:

Beams and channels, 15-inch, and under, 1.70c; over 15 inches, 1.80c; zees, 1.70c; tees 1.70c; angles from three to six inches inclusive, 1.70c; over six inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.80c base.

Wire and Wire Nails.—Despite the fact that the heavy season for fencing is two months past, and the customary summer shut-down period is approaching, there has been no cessation in the volume of business being received by producers, and the demand for wire and wire nails is as heavy at the present time as it was during the early spring months, with mills unable to accumulate enough stock on hand to give a fair assortment. On account of inability to make shipments, a large volume of the business which under ordinary circumstances would have gone on the spring market will be carried over until fall. There has been no change in prices, but we anticipate an early advance in the price of wire nails.

Wire nails, jobbers' carload lots, $2; retailers' carload lots, $2.05; less than carloads, $2.10; painted barb wire, $2.15, for jobbers in carloads; retailers in carloads, $2.20; and less than carload, $2.30, with 30c for galvanizing; plain wire, $1.85 for jobbers, and $1.90 by carload.

Merchant Pipe.—There has been practically no new business in line pipe, although the volume of new contracts for merchant pipe has been as heavy as usual. Notwithstanding the fact that mills are making absolutely no delivery promises on new business, the tonnages being placed for merchant pipe have not been in any way reduced in comparison with the past weeks. We quote the following consumers' discounts of the leading interest, subject to one point and five to jobbers in large lots:

	—Steel— Black.	Galv.
⅛ and ¼ inch	65	49
⅜ inch	67	53
½ inch	69	57
⅝ to 6 inches	73	63
7 to 12 inches	70	55
EXTRA STRONG PLAIN ENDS.		
⅛ to ¾ inch	58	46
½ to 4 inches	63	53
4½ to 8 inches	61	49
DOUBLE EXTRA STRONG PLAIN ENDS.		
½ to 8 inches	54	43

Iron Pipe.—The steady volume of new business, much of it without delivery promise, is being taken on and local mills are filled for several months ahead. We quote the following consumers' discounts:

RANDOM LENGTHS WITH THREADS AND COUPLINGS —CARLOAD LOTS.	Blk.	Gal.
⅛, ¼, and ⅜ inch	59	43
½ inch	62	51
¾ to 6 inches	67	57
7 and 8 inch	62	46
PLUGGED AND REAMED.		
1 to 4 inch	65	55
CUT THREE TO SIX FEET.		
⅛, ¼, and ⅜ inch	55	39
½ inch	58	47
¾ to 6 inch	63	53
7 and 8 inch	58	42

Boiler Tubes.—There has been no change in prices and the demand continues heavy. Several fair sized contracts for locomotive boiler tubes for deliveries over the next four months have been placed. We quote the following official discounts:

	Iron.	Steel.
1 to 1½ inch	42	47
1¾ to 2¼ inch	42	59
2½ inch	47	61
2¾ to 5 inch	52	65
6 to 13 inch	42	59

2¼ inches and smaller, over 18 feet, 10 per cent net extra.
2¾ inches and larger, over 22 feet, 10 per cent net extra.

Coke.—Coke prices still continue weak, and as a matter of fact lower prices have been quoted during the past ten days than at any time since the beginning of the present downward movement. The weekly production reports show a gradual increase with no improvement in outlet, and as a result there is a big surplus, notably so in foundry coke. There has been some movement for both spot and last half, but at low prices. The movement along the lines of curtailing output in the regions has not taken on definite form, largely on account of the large number of small producers who would not be likely to co-operate. Foundry coke, standard grades, is quoted in various quarters at $3 for last half deliveries, but some business has been done at a considerably lower figure. Spot furnace coke has sold during the past ten days below $2. The large producers are asking $2.25 to $2.40 on last half contracts.

Old Material.—The excitement in steel scrap has quieted down and dealers are now endeavoring to unload material taken on during the recent bull movement. The leading interest, although it has been feeling the market, has not bought any large tonnage. For delivery, gross tons, in the Pittsburg district, we quote as follows:

Heavy melting scrap, $18.50 to $18.75; re-rolling rails, $19 to $19.50; bundled sheet scrap, $16 to $16.50;

iron axles, $31 to $31.50; old iron rails, $23 to $23.50; No. 1 wrought scrap, $18.50 to $18.75; old car wheels, $24.50 to $25; low phosphorus scrap, $23 to $23.50; machine shop turnings, $15.25 to $15.75; axle turnings, $15.75 to $16; cast borings, $13.50 to $14; No. 1 cast scrap, $21 to $21.50.

CHICAGO.

Curtailment by Railways—Little Trading in Pig Iron—Scrap Erratic.

Office of THE IRON TRADE REVIEW,
1362 Monadnock Block, June 11.

If the statement attributed to a high official of the United States Steel Corporation, widely published a couple of months ago to the effect that that interest would gladly fill in all vacancies on car builders' order books created by cancellations of orders by railroads, is true, the reported contract for 6,000 steel cars let to Pittsburg and western car builders by the Steel Corporation may be tacit acknowledgement that these vacancies have existed. It is acknowledged by manufacturers of railroad supplies that retrenchment has been going on for several weeks, and that, comparatively speaking, a considerable amount of business has been quietly cancelled within this period. These 6,000 cars, supplemented by 3,000 additional cars ordered a few days ago by the Chicago, Burlington & Quincy and the Chicago & Great Western railways may be ample, however, to fill the gaps that have been made. The unfavorable weather and poor crop prospects have not induced curtailment in other directions. New tonnage is naturally light at this time of the year, but specifications for all materials continue to the capacity of mills. Pig iron is dull, but prices remain firm and without change. The demand for structural steel is especially heavy, the best delivery now obtainable from the American Bridge Co. being six months. The consumption of sheets, plates and merchant pipe is on an unprecedented scale, the entire output in each product going into immediate consumption. Some delays to shipments have been requested, but when traced down they have invariably developed from a desire to reduce stocks to facilitate inventory taking.

Pig Iron.—No features of interest or significance have developed this week in pig iron. Trading has been very light, and in the main orders were for car lots or 100 and 200 tons. Offerings of spot iron are plentiful, but there are few takers. Some shading has been done in several instances to prevent demurrage charges, but not sufficient to affect the market. Quotations continue at $22.50 to $23 Birmingham for southern No. 2 foundry, and $27 Chicago for northern No. 2. Delinquent tonnage is rapidly being overtaken, and few complaints are now heard of low stocks or slow deliveries. No uneasiness is displayed by sellers at the dullness prevailing. A let-up is usually experienced about this time of the year; and, since all the furnaces are comfortably filled with business, a cessation of buying is welcomed rather than otherwise. Quotations for the third and fourth quarters are unchanged, as given below. The minimum price is for the fourth quarter; the maximum for third quarter deliveries:

Lake Superior charcoal	$ 27.50
Northern Foundry No. 1	25.50
Northern Foundry No. 2	25.00
Northern Foundry No. 3	24.50
Northern Scotch Foundry	25.50
Southern Foundry No. 1	24.85 to 26.35
Southern Foundry No. 2	24.35 to 25.85
Southern Foundry No. 3	23.85 to 25.35
Southern Foundry No. 4	23.35 to 24.85
Southern No. 1 Soft	24.85 to 26.35
Southern No. 2 Soft	24.35 to 25.85
Southern Gray Forge	22.85 to 24.35
Southern Mottled	22.60 to 24.15
Southern Silveries, 4 per cent to 6 per cent Silicon	28.85 to 29.85
Jackson Co. Silveries, 6 per cent.	29.40 to 29.90
Jackson Co. Silveries, 8 per cent.	30.40 to 30.90
Jackson Co. Silveries, 10 per cent	31.40 to 31.90
Malleable Bessemer	25.00

Billets and Rods.—Conditions are substantially the same as they have been for several weeks. Inquiries for odd lots of rods and billets are constantly before makers, but there is not a steady demand for either. Prices are unchanged at $37 Pittsburg for wire rods, and $36 to $38 Chicago for forging billets.

Merchant Bars.—New tonnage in iron and steel bars is light. Prices remain firm, however, mills being comfortably filled with orders. Several requests to hold back deliveries until after inventories have been taken were received in the past week from implement manufacturers, but these postponements are more than taken care of in the tonnage specified for delivery in the first month after inventory. Generally speaking, indications are that the implement trade will consume more material this summer than has been the case in past years. The shortage of specifications is more noticeable in car building material. The retrenchment in this direction is attributed entirely to the continuation of unfavorable weather. Only one important inquiry from a car builder is now pending. It is for 1,000 tons of steel bars. It is doubtful, however, whether this order will be placed as a concession in price is demanded. Jobbers report a waning demand from stock. We quote carload lots, Chicago delivery, as follows: Bar iron, 1.78c to 1.83c; soft steel bars and bands, 1.78c half extras; soft steel angles, less than 3 x 3, 1.88c; hoops, 2.18c base, full extras; planished or smooth finished tire steel, 1.98c; iron finish, up to 1½ x ½ inch, 1.93c base; iron finish, 1½ x ⅛ inch and larger, 1.78c base; channels for solid rubber tire ¾ to 1 inch, 2.28c, and 1⅛ inch and larger, 2.18c; smooth finished machinery steel, 2.18c; flat sleigh shoe, 1.83c; concave and convex sleigh shoe, 2.08c; cutter shoe, 2.36½c; toe calk steel 2.33c; railway spring, 1.98c; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are irregular, though the official prices are without change at 50 per cent off in car lots, and 45 per cent in less than carload lots, base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 2.25c full extras; soft steel rounds, and square, 3-inch and larger, $2 per 100 pound base; flats, 2 inches to 4 inches by ⅛ inch and larger, $2 per 100 pounds base; 4½ inches by 5 inches and 6 inches by 5-16 inch and thicker, $2 per 100 pounds base; all ovals, half rounds, $2 per 100 pounds base; steel bands, $2 half extras; soft steel hoops, $2.50 full extras. Other sizes not mentioned above, $2 per 100 pounds base, plus half extras.

Plates.—The purchase of 6,000 steel cars by the Steel Corporation; 2,000 cars by the C., B. & Q., and 1,000 cars by the Chicago & Great Western, are the most notable transactions of the week. One-half the steel company's order went to car plants in the west, and the remainder to Pittsburg interests. It is estimated that 100,000 tons of plates will be required to fill this order, a consumption in which the local mills will share liberally. Specifications from consumers having contracts with local producers continue heavy. Early deliveries still command premiums. We quote as follows:

Plates, ¼ inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.70c to 2c Pittsburg base. For extras see Pittsburg report. Freight rate to Chicago, 18c per 100 pounds for carload lots, and 20c per 100 pounds for less than carload lots. Jobbers' prices for shipment fom local stocks are as follows: Tank steel, ¼ inch and heavier up to 72 inches wide, 2.20c; 3-16 inch up to and including 60 inches wide, 2.30c; 3-16 inch 72 inches wide, 2.55c; No. 8 up to 60 inches wide, 2.50c. Flange steel, 25c extra; heads, 25c extra.

Sheets.—The demand for sheets continues brisk. Specifications are not so insistent and mills are slowly improving their shipments. We quote as follows:

Black sheets, Nos. 8, 9 and 10, 1.90c Pittsburg; No. 28, 2.60c Pittsburg. Galvanized sheets, No. 28, 3.75c Pittsburg. Freight to Chicago, 18c per 100 pounds for carload lots, and 20c for less than carload lots. Jobbers' prices on carload lots and less from store are as follows:

No. 10, 2.50c to 2.55c; No. 12, 2.55c to 2.60c; No. 14, 2.60c to 2.65c; No. 16, 2.70c to 2.80c; Nos. 18-20, 2.80c to 2.90c; Nos. 22-24, 2.85c to 2.95c; No. 26, 2.90c to 3c; No. 27, 2.95c to 3.05c; No. 28, 3.05c to 3.15c; No. 30, 3.35c to 3.45c. Galvanized sheets, No. 10 to

20, 3.50c to 3.55c; Nos. 22 and 24, 3.65c to 3.75c; No. 26, 3.85c to 3.90c; No. 27, 4.05c to 4.15c; No. 28, 4.25c to 4.35c; No. 30, 5.40c to 5.45c.

Structural Steel.—The great amount of structural business under consideration throughout the country is slow in developing, and current orders are mainly for lots running as high as 500 tons. These have been unusually numerous of late in the territory contiguous to Chicago, indicating considerable activity in the erection of domiciles and factories. Fabricators are full of work for the summer, the best delivery obtainable from the American Bridge Co. being six months. The only important contract let in the week under review is for local track elevation work, 1,700 tons of shapes having been ordered for this work from the American Bridge Co. The contract for the Mills building, San Francisco, 1,100 tons, has been let to the American Bridge Co. The same interest has also been offered the order for the steel required in the Phelan building, if it can make delivery within four months. Prices are unchanged as follows:

Beams and channels, 3 to 15 inches inclusive, 1.70c Pittsburg. For extras see Pittsburg report. Freight rate from Pittsburg to Chicago, 18c per 100 pounds for carload lots, and 20c per 100 pounds for less than carload lots. Quotations from store are as follows:

All angles, three inches and larger, including six inches, $2.10 per 100 pounds; angles over six inches, $2.15 per 100 pounds base; beams, 3 to 15 inches inclusive, $2.10 per 100 pounds base; channels, three inches and larger, $2.10 per 100 pounds base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—An order from a western steam road for 10,000 tons of rails for 1908 delivery has been placed with the local mill. This is the only contract for that material let in the week under review, although several round lots are pending. Demand for track supplies is active, but it is entirely for this year's delivery and these shipments are hard to secure. No change is noted in light rails. Orders are plentiful and prices are firm. We quote as follows:

Bessemer rails, $28 to $30; less than 500-ton lots, $32; open-hearth rails, $29; light rails, Bessemer, 30 to 45-pound sections, $35; 25-pound, $36; 20-pound, $37; 16-pound, $38; 12-pound, $39, and lighter sections down to 8-pound, $45.50, all f. o. b. mill. Track supplies vary in price according to quantity and delivery. On orders accompanying rail contracts for future delivery, we quote angle bars, 1.65c; spikes, 2.35c; bolts with square nuts, 2.65c; with hexagon nuts, 2.80c. For carload lots or less, for prompt shipment, the following prices are asked: Angle bars, 2.25c to 2.75c; spikes, 2.60c to 2.70c; bolts with square nuts, 2.85c; with hexagon nuts, 3c.

Cast Iron Pipe.—Another quiet week has passed. The only municipal letting pending is that of Medina, O., for 300 tons. Routine business, involving small lots for betterments and extensions, shows a decided falling off. High prices are blamed for the decline, sellers maintaining that many municipalities and private water and gas companies have postponed improvements for this cause. Prices are without change, as follows: Four-inch water pipe, $38.60; 6 to 12-inch, inclusive, $37.60; gas pipe, $1.00 a ton higher.

Merchant Pipe and Boiler Tubes.—The congestion on pipe has not been relieved in the least. Mills are overwhelmed with orders and specifications and the best delivery that can be made is from three to four months from date of order. Butt sizes are in the greatest demand just now, specifications being unusually heavy for these. Prices are very firm. Mill quotations, carload lots, Chicago delivery, are given below. On steel pipe, jobbers are allowed a concession of one point and five per cent additional.

MERCHANT PIPE.

	—Steel— Black.	Galv.
¼ to 6 inches, inclusive.....	71.2	61.2

BOILER TUBES.

	Steel.	Iron.
2¼ to 5 inches, inclusive.....	62.2	49.2

Mill quotations on iron pipe are from four to five points higher than above. A concession of one point from the following quotations, is allowed by Chicago jobbers on orders for shipment from local warehouse stocks. We quote for less than carload lots as follows:

MERCHANT PIPE.

	Black.	Galv.
⅛ to ¼ inch.....	60	44
⅜ inch	62	48
½ inch	64	52
¾ to 6 inches.....	68	58
7 to 12 inches.....	64	49

Minimum prices for wrought iron pipe, carload lots or greater, are as follows: ⅛ in. to ¼ in., 55; ⅜ in., 57; ½ in., 59; ¾ in. to six inches, 64; 7 in. to 12 in., 59. Boiler tubes from store are unchanged at 60 off for steel; 47½ for iron, and 42½ for seamless, base sizes, 2¼ inches to 5 inches.

Wire Products.—No change is noted in conditions surrounding the production and consumption of wire products. Demand is very heavy and deliveries are slow. We quote prices to jobbers as follows: Wire nails, $2.18; painted barb wire, $2.33; galvanized barb wire, $2.63; smooth annealed wire, $2.03; smooth galvanized wire, $2.33; polished staples, $2.28; galvanized, $2.58. Carload lots to retailers, five cents higher; less than carload lots, 15 cents higher.

Coke.—Demand is light and prices continue weak. On last half contracts standard furnace coke is quoted $2.25 to $2.40, and foundry coke $3.00 to $3.15, Connellsville ovens.

Old Material.—The local market is very erratic. No two opinions agree on conditions or prices. Generally speaking, all materials are scarce and prices have an upward tendency. Heavy melting steel of all grades, cast scrap, railroad malleable, borings and turnings are scarce. Several large local consumers are in the market covering for forward requirements in these grades. The insistent demand for shipments on contracts continues and many dealers are forced to protect earlier sales at a loss. Country dealers are withholding their stocks from the market and some difficulty is experienced in filling orders. The Chicago, Milwaukee & St. Paul list for 2,100 tons is the only railroad list out. Bidding is active on the lots specified. We have revised our prices, and quote as follows, gross tons in the first paragraph:

Standard Bessemer	25.40 to 25.90
Old Car Wheels.....	25.25 to 25.75
Old Iron Rails	24.50 to 25.00
Rerolling Rails (3 feet and over)	19.25 to 19.75
Old Steel Rails (3 ft. and under)	18.50 to 19.00
Light Section Relayers, 45 lbs. and under, subject to inspection...	30.00 to 32.00
Relaying Rails, subject to inspection	28.00 to 30.00
Frogs, Switches and Guards....	17.50 to 18.00
Heavy Melting Steel.....	16.50 to 17.00
Mixed Country Steel.....	12.50 to 13.00

We quote net tons as follows:

No. 1 R. R. Wrought.....$	16.25 to 16.75
No. 2 R. R. Wrought.....	15.75 to 16.00
Knuckles, Couplers and Springs.	16.50 to 17.00
Shafting	17.75 to 18.25
Dealers' Forge No. 1.....	13.25 to 13.75
Pipes and Flues.....	12.75 to 13.25
No. 1 Cast, 150 lbs. and less...	19.00 to 19.50
No. 1 Mill.....	10.25 to 10.75
Mixed Busheling (Nos. 1 and 2).	12.25 to 12.75
Country Sheet	8.75 to 9.25
No. 1 Boiler Cut.....	12.25 to 12.75
Boiler Punchings	15.50 to 16.00
Cast Borings	10.50 to 11.00
Mixed Borings, etc.....	10.50 to 11.00
Machine Shop Turnings.....	12.50 to 13.00
Railroad Malleable	17.50 to 18.00
Agricultural Malleable	16.00 to 16.50
Stove Plate and Light Cast Scrap	15.75 to 16.25
Old Iron Splice Bars.....	19.00 to 19.50

CLEVELAND.

Improvement in Coke.—Large Railroad Tonnages of Scrap for Sale.

Office of THE IRON TRADE REVIEW, Browning Building, June 11.

Iron Ore.—The congestion which prevailed at lower lake ports last week has been relieved, and a very heavy tonnage has since been han-

dled. The prospect is that fully 6,000,000 tons of ore will be shipped from Lake Superior ranges during the present month. With one exception the railroads have been giving improved service in cars.

Pig Iron.—Increased interest in iron for the first half of 1908 is noticeable, and some sales have been made, but neither furnaces nor buyers are disposed to force the market. For that delivery $22 furnace is the nominal quotation, but this has been shaded 50 cents. There is a probability of a shortage in steel-making iron for the last half of the year, and it seems certain that large users of foundry iron will also have difficulty in placing their orders. Some of the largest foundry concerns in the country have not covered for their full requirements. We quote, f. o. b. Cleveland, for last half delivery, as follows:

Bessemer	$23.90
No. 1 Foundry	24.50
No. 2 Foundry	24.00
No. 3 Foundry	23.50
No. 2 Southern	24.35
Gray Forge	22.50

Coke.—There has been a decided increase in buying within a few days, and some good sized contracts have been made, foundry coke being especially in demand for the last half of the year. Prices are firmer and we quote furnace coke at $2.15 to $2.25, and for last half at $2.25 to $2.50. For last half delivery, foundry coke is selling at $3.25, although one important interest is holding firmly at $3.50.

Finished Material.—Mills have recently made an unusually large number of contracts at full prices. Although new buying is not so active as it was some weeks ago, the market is very strong and in good condition in every way. We note the sale of 4,000 tons of steel bars and angles to agricultural implement interests. One sale of 300 tons of rails for a traction line has been made. Traction interests have difficulty in financing their enterprises, a number of which are pending. Bar iron is firm. Many of the mills expect to shut down July 1, according to the usual summer program. One large interest is now delivering universal plates in from three to four weeks.

Old Material.—The market appears to be made up largely of buying between dealers, and that tonnages are in strong demand from the standpoint of the former is indicated by the increasing prices at which the railroads are closing out their lists. The Pennsylvania lines west with several thousand tons and the Big Four with 1,000 tons awarded their scrap at higher prices during the week. Of the Pennsylvania list over 1,000 tons came to one Cleveland dealer. The Pennsylvania lines east are in the market with an immense tonnage of old material of all grades, aggregating over 40,000 tons. The heavy railroad offerings are expected to have the tendency of holding the market stationary or at least of restraining further advances. Stove plate is in strong demand and is hard to obtain. This is attributed to the fact that although this is the season when large tonnages of this grade usually appear, the supply has been limited, because as fast as the scrap was brought in during the winter and early spring, it was greedily taken by consumers. Cast iron generally remains strong. We have revised our quotations and quote, f. o. b. Cleveland, gross tons, as follows:

Old iron rails	$24.00 to 25.00
Old steel rails (re-rolling)	17.75 to 18.75
Old steel rails (under 6 feet)	17.50 to 18.50
Old car wheels	24.00 to 25.00
Steel boiler plate	14.50 to 15.50
Steel axles	22.00 to 23.00
Malleable iron (railroad)	19.00 to 19.25
Malleable iron (agricultural)	17.25 to 17.75
Heavy steel	16.75 to 17.25
Country mixed steel	15.25 to 15.75
Low phosphorus	21.50 to 22.50

We quote net tons as follows:

No. 1 R. R. wrought	$16.50 to 17.00
No. 1 busheling	14.50 to 15.00
No. 1 machine cast	18.75 to 19.25
Iron axles	26.00 to 26.50
Axle turnings	13.50 to 14.00
Wrought turnings (free from cast)	12.50 to 13.00
Grate bars	15.00 to 15.50
Pipes and flues	14.00 to 15.00
Tank iron	12.50 to 13.50
Hoop and band iron	8.50 to 9.00
Sheet iron	7.50 to 8.50
Wrought drillings	12.50 to 13.00
Stove plate	15.00 to 15.50
Cast borings	10.75 to 11.25

CINCINNATI.

Pig Iron Quiet but Firm.—Coke Active With Irregular Prices.

June 11.

Pig Iron.—A quiet, firm market continues to prevail. There is not much inquiry or buying. Prices are practically the same as a week ago. Deliveries are good and the spot iron market is dull. The offerings of prompt shipment iron are also light, which gives the price situation no weakness. Spot and quick shipment southern iron is quoted at $21.50 to $22.00 Birmingham. Some little northern spot iron has been sold at $25.00 at furnace. Delivered prices at Cincinnati for the list of grades are as follows:

Southern foundry No. 1	$25.25 to 25.75
Southern foundry No. 2	24.75 to 25.25
Southern foundry No. 3	24.25 to 24.75
Southern foundry No. 4	22.50 to 22.75
Southern No. 1 soft	25.25 to 25.75
Southern No. 2 soft	24.75 to 25.25
Southern gray forge	21.75 to 22.25
Northern No. 1 foundry	25.65 to 26.65
Northern No. 2 foundry	25.15 to 26.15
Northern No. 3 foundry	24.65 to 25.65

There is hardly enough business doing in third quarter iron to establish prices, but southern brands are regarded as quotable at $21.00 Birmingham, with $20.50 as probable minimum. For the last quarter of the year $19.50 Birmingham can be done, but the general market is $20.00. There is but little northern iron offered for this year, but it is reported in the trade that some northern iron for delivery over the last four months of the year was taken at $23.00 at furnace.

Interest in the first half of next year is not important. An inquiry from a melter in Indiana for 1,000 tons of northern iron for this delivery has brought out the fact that some interests do not care to quote $22.00 at furnace, although that is the general asking price. Some malleable Bessemer, about 500 tons, is reported to have been sold at something under $22.00 at furnace for first quarter delivery. The only other transaction of interest is an inquiry from a melter in the Pittsburg district for 1,500 tons for prompt shipment.

Southern iron is still firm at $18.50 Birmingham for next year's delivery.

Shipments have been heavy the last two months and furnaces are in better shape now in regard to past due contracts than at any time this year. Under this liberal movement, stocks in furnace yards are light and supplies in consumers' hands are better. While the present market is quiet, there is much confidence in the actual strength of the situation and it is expected that as we enter the second half of the year there will be more interest in requirements for 1908. We quote for last quarter delivery delivered Cincinnati as follows:

Southern Foundry No. 1	$23.25 to 23.75
Southern Foundry No. 2	22.75 to 23.25
Southern Foundry No. 3	22.25 to 22.75
Southern Foundry No. 4	21.75 to 22.25
Southern Foundry No. 1 soft	23.25 to 23.75
Southern Foundry No. 2 soft	22.75 to 23.25
Gray Forge	20.75 to 21.00
Northern foundry No. 1	24.65 to 25.15
Northern Foundry No. 2	24.15 to 24.65
Northern Foundry No. 3	23.65 to 24.15

Finished Material.—The retailing demand is active and prices are well maintained. Orders for small lots are filled here at the following prices:

Angles, 3 x 3 and over, 2.15c to 2.25c; beams and channels, 15 inches and under, 2.15c; small angles and architectural channels, 2.10c base; plates ¼ inch and heavier, 2.10c; 3-16 inch 2.20c; No. 8, 2.20c; sheets (blue annealed No. 10, 2.30c; No. 12, 2.35c; No. 14, 2.40c; No. 16, 2.50c; box annealed sheets, Nos. 18 and 20, 2.65c; Nos. 22 and 24, 2.75c; Nos. 25 and 26, 2.80c; No. 27, 2.85c; and No. 28, 2.95c. Iron and steel bars, 2.00c base; boiler tubes, 62 per cent off base; turn-

buckles, 45 per cent off; rivets, 3.15c base; cold rolled shafting, 45 per cent off list; steel tire, 2.10c base.

Coke.—There is still considerable activity in the market with prices irregular. Offerings are free and ovens appear eager for business. Spot coke is weak with only a moderate call. Contracts are under negotiation with prices in buyers' favor, but the range of prices is about the same as a week ago. Quotations in the leading coke producing districts are as follows:

Wise County, Va., Furnace Coke, prompt shipment	$2.50 to 2.75 per ton
Wise County, Va., Foundry Coke	3.25 to 3.40 per ton
Pocahontas Furnace Coke, prompt shipment	2.50 to 2.75 per ton
Pocahontas Foundry Coke	3.00 to 3.25 per ton
Connellsville Furnace Coke, prompt shipment	2.50 to 2.75 per ton
Connellsville Foundry Coke	3.00 to 3.50 per ton
New River Foundry Coke, prompt shipment	3.25 to 3.40 per ton
New River Furnace Coke, contract	2.75 to 2.90 per ton

Old Material.—The market rules strong and some quotations are higher. Trading is active among dealers. We have revised quotations and quote as follows:

Old No. 1 R. R. wrought net tons	$17.00 to 17.50
Cast machine and f'dy, net tons	19.25 to 19.75
Old iron rails, gross tons	24.50 to 25.50
Old steel rails, gross tons	18.25 to 19.25
Old short lengths, gross tons	18.50 to 19.50
Old iron axles, net tons	26.50 to 27.00
Heavy melting scrap, gross tons	22.00 to 22.50
Stove plate, net tons	15.50 to 16.00
Wrought turnings, net tons	13.00 to 14.00
Cast borings, net tons	11.50 to 12.00
Car wheels, gross tons	24.50 to 25.50

PHILADELPHIA.

Small Mills Not Oversupplied With Orders.—Spot Pig Prices Lower.

June 11.

Pig Iron.—The stock expression, "quiet, but firm," applies with great aptness to the pig iron situation. Buying has been only moderate, but there has been no real weakening in prices, and the indications are that there will be no important changes in them for some time. A good many consumers have not covered their requirements yet for the third and fourth quarters, and, despite the sold-up condition of many furnaces, seem to have little doubt of their ability to get iron when they need it. This contention of theirs seems to find some basis in the fact that spot prices are a little easier than they were, No. 2 X foundry bringing $25.50 to $26. This condition is explained by furnace men as being due to the fact that they are making better headway in catching up with their orders, and that this gives them at times a little better supply than they had counted on. Inquiries for the first quarter of 1908 are still being made, but it cannot be learned that many sales are being made. Low phosphorus iron is unusually scarce, and readily brings $28. English iron continues to arrive in considerable quantities, and of three cargoes due here in the first three weeks of June, all but a small part of the last cargo has been sold. Prices are steady at $22.50 dock for Middlesbrough No. 3. Purchases of this iron have been made in England for delivery here in August, and if the present prices of the domestic product hold up, it is expected that the imports will run at least as far as October, which will round out just a year since Americans turned to England for relief. Prices for the last half, which show some slight changes, may be quoted as follows:

No. 1X Foundry	$25.50 to 26.00
No. 2X Foundry	24.00 to 25.00
No. 2 Plain	23.50 to 24.00
Standard Gray Forge	22.50 to 23.00
Basic	23.25 to 24.00
Low Phosphorus	27.75 to 28.25

New Material.—Complaints of slow collections from the consumers of finished products indicate that in some quarters prosperity may not be so marked as has been reported. Orders placed in Pittsburg are still subject to delays of two to four months, but some of the small mills in eastern territory are by no means so busy and would be glad to receive a larger volume of business. The prevailing uncertainty as to the crops and financial uncertainty seem to be exerting a retarding influence. Prices for the time, however, remain unchanged as follows: Beams, channels and angles, according to specifications, 1.83½c to 2c; refined iron bars, 1.83½c to 1.88½c; steel bars, 1.83½c to 1.88½c; plates, 1.98½c to 2.03½c.

Old Material.—The scrap market shows no price changes, and, while very quiet, resists all efforts to bring lower quotations. These remain as follows:

Old steel rails	$19.50 to 20.00
No. 1 steel scrap	19.00 to 19.50
Old steel axles	22.50 to 23.00
Old iron axles	31.00 to 32.00
Old iron rails	27.00 to 28.00
Old car wheels	24.00 to 25.00
Choice scrap R. R. No. 1 wrought	20.50 to 21.00
No. 1 yard scrap	18.50 to 19.00
Machinery Scrap	21.50 to 22.00
Low phosphorus scrap	23.50 to 24.00
Wrought iron pipe	16.00 to 17.00
No. 1 forge fire scrap	17.00 to 17.50
No. 2 forge fire scrap, ordinary	11.50 to 12.00
Wrought turnings	17.00 to 17.50
Axle turnings, heavy	17.00 to 17.50
Cast borings	16.25 to 16.75
Stove plates	17.50 to 18.00

NEW YORK.

Pig Iron Extremely Quiet—English Iron Shows Some Fluctuations.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., June 11.

Pig Iron.—The pig iron market of this district and New England continues in an abnormally quiet state, and is without feature except for the remarkable extent to which it has maintained its strength during the past three weeks of inactivity. While there has been an almost complete absence of inquiry, except in one or two instances already noted, prices for forward shipment have been well maintained and do not now manifest any signs of weakness, although the prediction is frequently ventured that the trade is starting in on a long stretch of comparative quietness. Furnaces are so well sold up that they display no eagerness for business, apparently feeling assured that the enforced purchases of concerns as yet uncovered for the remainder of the year will absorb any surplus iron. Spot iron has become much easier, however, and there are occasional reports of requests for a postponement or readjustment of deliveries. The British market, always speculative, has broken sharply during the week, but has recovered a part of its loss. No. 3 Middlesbrough dropped to 58s 2d late last week, but opened on Tuesday at 58s 7d. Stocks continue to show heavy withdrawals, but the demand for shipment to both Germany and the United States has become less acute, and no further engagements may be expected for the present. Cargoes soon to arrive have all been disposed of. No large purchases of domestic iron are to be discovered. The American Locomotive Co. has not yet closed for its 15,000-ton inquiry, and the New York Air Brake Co. has not yet purchased all the iron on which it sought tenders, while pump interests will have to enter the market shortly. There is some slight inquiry for 1908 delivery. Prices manifest no radical changes, and may be quoted at tidewater as follows, the higher figures being for prompt shipment:

Northern Foundry No. 1	$24.00 to 26.00
No. 2X Foundry	23.50 to 25.50
No. 2 Plain	23.00 to 25.00
No. 2 Southern Foundry	23.50 to 25.50
Basic	23.00 to 24.50

Ferro-Manganese.—The eagerness of certain selling interests in the east to dispose of accumulations has sent the price downward, and the market, which a month ago gave every indication of continued strength, has become extremely easy. Premium business has almost entirely disappeared and 80 per cent for any shipment can be had at from $62.00 to $63.00 tidewater.

Finished Materials.—Although interest is naturally centered in the failure of Milliken Bros., Inc., as a heavy local producer of finished materials and a competitor for the export trade, it is considered unlikely that the situation will thereby be affected to any considerable degree. This interest holds a number of important contracts in connection with local building enterprises, but it is ex-

pected that its affairs will be so adjusted that these will be completed without re-letting. The structural market is extremely quiet. There is still considerable business in sight, but lettings of consequence are few and far between and steel concerns are looking forward to a light June. The American Bridge Co. has taken 1,700 tons of bridge materials for the Chicago & Northwestern for use in track elevation work and several local contracts are still pending. Buffalo is preparing plans for the elimination of some 24 grade crossings on the New York Central, the total cost of the work being estimated at about $3,000,000. Plates are in good demand and encouraging reports of the letting of large contracts for steel cars, notably 6,000 for the lines of the Corporation, add strength to the outlook. In other directions the market manifests little change. We quote, tidewater prices, as follows:

Angles, 3 to 6 inches x ¼ inch and heavier, 1.86c; beams, 3 to 15 inches, 1.86c; tees, 3 x ¼ and heavier, 1.91c; plates, carloads, tank, 1.96c; marine boiler, 2.26c; bar iron, 1.86c; soft steel bars, 1.76c; sheets, No. 28, black, 2.60c.

Old Materials.—The week has witnessed no important developments, other than that the Milliken failure may result in a slight decline in steel scrap at this point, as freight rates to Pennsylvania points will be higher than the water rate to the Staten Island plant. Steel scrap, in particular, continues in good demand, heavy cast scrap is easy and other lines are practically unchanged. We quote New York delivery, gross tons, as follows:

Old iron rails	$24.50 to 25.50
Old steel rails, long lengths	18.00 to 18.50
Old steel rails, short pieces	16.25 to 16.75
Relaying rails	28.00 to 29.00
Old car wheels	24.00 to 24.50
Old iron car axles	28.50 to 29.50
Old steel car axles	21.00 to 21.50
Heavy melting steel	16.75 to 17.25
No. 1 railroad wrought	18.00 to 18.50
Iron track scrap	17.00 to 17.50
Wrought pipe	14.00 to 14.50
Cast borings	14.00 to 14.50
Wrought turnings	14.75 to 15.25
Heavy cast scrap	18.75 to 19.25
Railroad malleable	17.00 to 18.00
Agricultural malleable	15.00 to 16.00
Stove plate	15.50 to 16.00
Grate bars	14.50 to 15.00
No. 1X Foundry	$23.75 to 24.00
No. 2X Foundry	23.00 to 23.50
No. 3 Foundry	22.75 to 23.00
No. 2 Plain	22.50 to 23.00
Malleable Bessemer	23.00 to 23.50
Gray Forge	22.00 to 22.50
Charcoal	27.00 to 27.50

BUFFALO

Pig Iron Market Quiet, with Few Transactions Reported.

June 10.

Pig Iron.—The market is very quiet as it has been for a month past, with no change in prices and few big inquiries. Local furnaces have not as yet sold up to the first of the year, but offer only small tonnage. No prompt is offered at this time. Inquiries come in occasionally for early 1908 deliveries, but tonnage is not being covered for that period, save in a very few instances. Cars have moved freely lately and furnaces are pretty well caught up on deliveries.

Valley furnaces are offering very little tonnage in this district, and the sales reported are small. One lot of prompt iron has just been placed here at $27.75, delivered, second quarter. The price at the valley furnace was $26.25 and freight charges $1.50. Southern furnaces have notified local representatives that they have no more iron to offer for 1907, except mill and lower grades. It is not expected that any great activity will be observed in this market during the next week.

We quote for last quarter delivery as follows:

No. 1X Foundry	$23.75 to 24.00
No. 2X Foundry	23.00 to 23.50
No. 3 Foundry	22.75 to 23.00
No. 2 Plain	22.50 to 23.00
Malleable Bessemer	23.00 to 23.50
Gray Forge	22.00 to 22.50
Charcoal	27.00 to 27.50

ST. LOUIS

Spot Pig Iron Strong—Little Third Quarter Iron on the Market.

June 10.

Pig Iron.—Pig iron for immediate shipment is very strong at from $23 to $24 for No. 2 f. o. b. Birmingham, the latter quotation having been made on one or two cars for spot delivery to persons who had run out of iron. There is practically no third quarter iron on the market, and very little for the last three months of this year. Quotations for the last quarter range from $20.50 to $21.50 f. o. b. Birmingham. Prices for the first three months of 1908 remain firm at $18.50, while some sales are reported at $19. There is not much buying at present, but prices for all deliveries are very firm. Our quotations f. o. b. Birmingham, to which the freight of $3.75 to St. Louis is to be added, are as follows:

No. 1	Southern	$22.50 to 24.00
No. 2	Southern	23.00 to 23.50
No. 3	Southern	22.50 to 23.00
No. 4	Southern	22.00 to 22.50

Coke.—The demand for coke is somewhat easier. Prices for immediate shipment for 72-hour furnace coke, f. o. b. Connellsville ovens, are from $3.10 to $3.50. The freight to East St. Louis is $2.80, and to St. Louis, $2.90 per ton.

Steel.—The demand for steel is described as normal, neither good nor bad. Structural steel is in good demand, also light rails. Standard rails for 1908 delivery are not so good.

Scrap Iron.—The market for scrap iron is stationary, with a slight increase in inquiries. Our quotations are as follows:

	GROSS TONS
Steel rails (less than 3 feet)	$17.50
Car wheels	25.00
Iron rails	24.50
Rerolling steel rails	18.00
Heavy melting steel	17.50
Country steel mixed	16.00
	NET TONS
No. 1 R. R. wrought	$17.50
No. 2 R. R. wrought	16.00
Iron splice bars and fish plates	19.00
Iron car axles	24.60
Steel car axles	19.50
Locomotive tires, smooth inside	15.50
Iron shaftings (3 to 6 inches)	19.00
Country wrought	15.00
Pipes and flues	13.00
Heavy machinery	17.50
R. R. cast (less than 300 pounds)	17.50
No. 1 Busheling	14.00
No. 2 Busheling	13.50
Boiler sheet and rings	13.00
R. R. cast borings (free of inferior quality)	10.50
R. R. wrought turnings	13.50
Machine shop turnings (free from brass)	12.50
Railroad malleable	16.50
Agricultural malleable	15.25
Cast stove plate	14.50

BIRMINGHAM, ALA.,

Efforts to Increase Production—Quotations are Firm.

June 10.

Efforts made to improve the production of pig iron in the Birmingham district are beginning to show results. Two furnaces have been blown in recently with one going out for temporary repairs. Two others are to blow in between now and July 10. A third one will be in full operation by the last of July and a fourth one within fifteen days of that date. There is need for every ton of iron that can be manufactured. A little quiet spell that has been on a week or more has not given the least apprehension as to the strength of the mart; in fact, the quotations are taking on strength instead of otherwise. No. 2 foundry iron, delivered during the fourth quarter of this year, is quoted freely now at $21.50 per ton while iron selling for delivery during the first three months in the coming year commands $18.50, No. 2 foundry.

Some of the companies in this district are yet troubled a little with their ore supplies. The Sloss-Sheffield Steel & Iron Co., the second largest iron company in the south, is producing more ore than it needs. A new washer was put into operation this week at the Russellville brown ore mines. The washer has a daily capacity of about 700 tons of ore.

The Tennessee Coal, Iron & Railroad Co. blew in a furnace this month. The Alabama Consolidated Coal & Iron Co. has the new furnace at Gadsden in blast at last. Work on this furnace was started more than 18 months ago. The furnace is equipped with most modern appurtenances and when in good working order should manufacture no less than 300 tons of iron daily. The Hattie furnace of the Sloss-Sheffield company in the Sheffield, Ala., district, is out for repairs. It is not believed the work will

take more than thirty days to complete. The Philadelphia furnace of this company, located at Florence, will be ready for the torch before July 1, while No. 4 furnace at North Birmingham, (Sloss-Sheffield), will be ready also inside of two or three weeks for the torch. The Woodward Iron Co. is pushing the work of repairs on the third furnace at Woodward and it should not be sixty days before this iron maker will be ready for operation.

BRITISH IRON MARKET.

Speculation Causes Some Fluctuation.—Preparing Furnaces for Operation.

Office of THE IRON TRADE REVIEW, Prince's Chambers, Corporation St., Birmingham, Eng., May 29.

There has been a little falling away in British pig iron from the minimum touched a week or two ago. Yesterday for example prices which have been as high as 61s 3d ($15) receded to 59s 6d ($14.56), the net decline on the day being 5d. But the business done aggregated 33,000 tons, including 1,500 tons of Cumberland hematite. For the most part, the fluctuations are due to the action of speculators, and furnish no criterion of the state of the trade. The best token of confidence is the energy being displayed in preparing furnaces for new operations. In the Furness district several furnaces are being got ready to start. No doubt is entertained that a big sale may be looked for for months to come both to America and Germany. The renewal of the Verband in Germany has had a marked effect on the demand for pig iron. The latest reports in regard to Middlesbrough stocks place the tonnage at 336,645 tons. This represents a fall of exactly 20,000 tons on the week, a figure which speaks eloquently as to the amount of business being done. Operations in the forges are practically recommencing this week, and the real condition of affairs in regard to demand will be much better manifest a few days hence, but on all hands the position is regarded quite cheerfully. In regard to other districts, the Derbyshire smelters have orders on their books to cover production till the end of November, while other houses have no metal at all to offer.

W. T. Twomey, for many years in the scrap iron business in Chicago, has organized the firm of W. T. Twomey & Co., with offices at 537 Rookery building, Chicago, to deal in iron and steel scrap of all kinds.

METAL MARKET.

NEW YORK.

June 11.

Copper.—The tendency is downward, with both the European and domestic markets weak and inactive. The current of business is small and prices are still largely nominal, with buying and selling interests at considerable variance. We quote as follows: Lake, 24c to 25c; electrolytic, 22½c to 23½c; casting, 21½c to 22½c. London closed yesterday at £97 10s for spot delivery, a net decline of 15s in the week, and at £94 10s for futures, a drop of 10s.

Pig Tin.—The foreign market is down somewhat, but the local demand shows a little improvement and demand is considerably stronger. We quote spot delivery at 41¼c to 42c, and June-July delivery at 40½c to 41c. London closed yesterday at £184 5s for spot, and £180 15s for futures, against £187 and £183 10s a week ago.

Pig Lead.—With a lighter demand the tendency is still downward. We quote New York at 5.75c to 5.80c for June delivery, with Missouri at 5.70c. Soft Spanish closed yesterday in London at £20 2s 6d, a slight advance.

Spelter.—Refined in carlots for spot and June shipment is quoted at 6.40c to 6.50c. London closed yesterday at £24 7s 6d.

Antimony.—The market has broken sharply and prices are very irregular. Cookson's may be quoted at 18c to 19c; Hallett's at 14c to 15c, and ordinary brands at 12½c to 13½c.

CHICAGO.

June 11.

A general drop of ¼c to ½c occurred on all metals except zinc during the week. The continued quietness of the market had its effect, and the break is believed to have been caused by dealers who had a heavy stock which they are anxious to dispose of.

Copper lake continued to sell for 26c, but casting dropped to 24c and 24½c. Sheet zinc was quoted at 8.60c LaSalle in car lots of 100-lb. casks. Spelter sold at 7¼c. Pig tin varied between 45¼ and 45½c. Lead desilverized was quoted at 6.30c and 6.40c in 50-ton lots, and corroding between 7c and 7.10c. The price in car lots was 2½c per 100 pounds higher. Cookson's antimony. dropped to 24c and 25c, and other grades to 23c.

Few sales were reported in the second hand metal market, although the changes in prices were few. Buyers' prices were: Copper wire, 19c to 19.50c; heavy copper, 19c; copper bottoms, 17.25c to 18c; copper clips, 19c; red brass, heavy, 18c; yellow brass, heavy 14.75c to 15c; red brass, borings, 16c; yellow brass, borings, 13.25c; light brass, 11c; zinc, 5c; pipe lead, 5.25c to 5.40c; tea lead, 5c; tin foil, 31c to 34c; pewter No. 1, 28c.

ST. LOUIS.

June 10.

Lead and Zinc.—The Joplin output during the last three weeks increased from 610 to 750 tons per week. This was due to the opening of new mines and the starting up of new mills, and means an increase in weekly values of from $28,000 to $35,000.

This is the banner record for the district, and the increase was most opportune, following as it did the flooding of a number of mines on May 13, which reduced the output 250 tons per week.

With the greatly increased production, is a healthy increase in the demand for zinc ore, occasioned by the large number of new smelters being started, and consequently an advanced market.

The highest price for the week was $51 per ton on a base price of ranging from $46 to $48 per ton of 80 per cent zinc.

Lead ore slumped $8 per ton during the week, closing at $75.50 and very weak, purchasing agents declining to make offerings at the end.

Failed to Agree.—The joint meeting of the Amalgamated Association of Iron, Steel & Tin Workers and the members of the Bar Iron Association, held in Toledo, June 7, adjourned after a brief session without an agreement. Another conference, which will be final, will be held in a short time, the date not having been decided.

The Independent Pneumatic Tool Co., Chicago, will have a complete working exhibit of its Thor pneumatic tools and appliances at the Railroad Master Mechanics & Master Car Builders' convention at Atlantic City, N. J., June 12 to 19. The exhibit will include the Thor reversible and non-reversible piston air drills, reaming, tapping, wood-boring and flue-rolling machines; the Thor pneumatic long stroke riveting, chipping, calking and beading hammers, turbine wood saw, close-quarter air drills, etc.

The repair shops of the Atchison, Topeka & Santa Fe railroad, Argentine, Kas., were heavily damaged by fire June 2.

PERSONALS.

Hazen Brown has been made vice president and general manager of the Shenandoah Steel Wire Co., West Seneca, N. Y.

J. C. Maloney, general superintendent of the Atlanta Steel Co., Atlanta, Ga., has tendered his resignation to take effect Aug. 1.

E. H. Flinn, Detroit, has been elected president of the recently organized Lake Superior Iron & Chemical Co., to fill the vacancy caused by the death of J. H. Berry.

R. A. Muhs has become general manager of the Spokane, Wash., branch of the J. I. Case Threshing Machine Co., succeeding O. H. Lewellen, promoted to the company's office at Minneapolis.

B. D. Quarrie, superintendent of furnaces of the Inland Steel Co., Indiana Harbor, Ind., has resigned to become superintendent of the Central furnaces of the American Steel & Wire Co., Cleveland.

G. H. Armstrong, formerly manager of the coke department of Matthew Addy & Co., has been appointed general manager of the Pittsburg-Connellsville Coal & Coke Co., with offices in the House building, Pittsburg.

F. E. Butcher, who has been connected with the export department of the Kilbourne & Jacobs Mfg. Co., Columbus, O., has resigned and will take the position of general manager of the American Concentrator Co., Joplin, Mo., July 1.

F. C. Irvine, formerly with Joseph T. Ryerson & Son, later sales manager of the American Rolling Mill Corporation, and Charles E. Stahl, treasurer of the American Rolling Mill Corporation, have formed a general brokerage firm under the name of the Irvine-Stahl Co., with offices in the Marquette building, Chicago.

W. H. Cowell was elected secretary and treasurer of the Wellman-Seaver-Morgan Co., Cleveland, vice A. D. Hatfield, resigned, at the recent meeting of the board of directors. Mr. Cowell is from Sault Ste. Marie, where he was formerly associated with W. M. Sawyer, now president of the Wellman-Seaver-Morgan Co.

Thomas H. Simpson, treasurer and general manager of the Michigan Malleable Iron Co., Detroit, has been elected president of the company to succeed the late William C. McMillan. Mr. Simpson also retains the position of treasurer. Philip H. McMillan continues as vice president and George M. Black as secretary.

Marshall Cushing, secretary of the National Manufacturers' Association, has resigned. George S. Buodinat, chief clerk, is temporarily filling the office.

D. J. Carson, who has been with the American Brake Shoe & Foundry Co., for the past two years, in charge of its New York office, has been appointed manager of the American Malleable Co., effective June 1.

W. H. McFadden, of the Mackintosh, Hemphill Co., Pittsburg, formerly president of the American Foundrymen's Association, is progressing favorably from the ill effects of the accident which befell him during the recent convention at Philadelphia and since caused his confinement to his room in the Bellevue-Stratford hotel in that city.

Joseph Wharton, of Philadelphia, president of the American Iron & Steel Association, sailed June 11 on the Kaiser Wilhelm II for a six weeks' tour of Great Britain and Europe. In the course of his trip Mr. Wharton expects to meet the Kaiser, as he has had extensive business dealings with the German government. He returned only recently from an inspection of mining properties in the west.

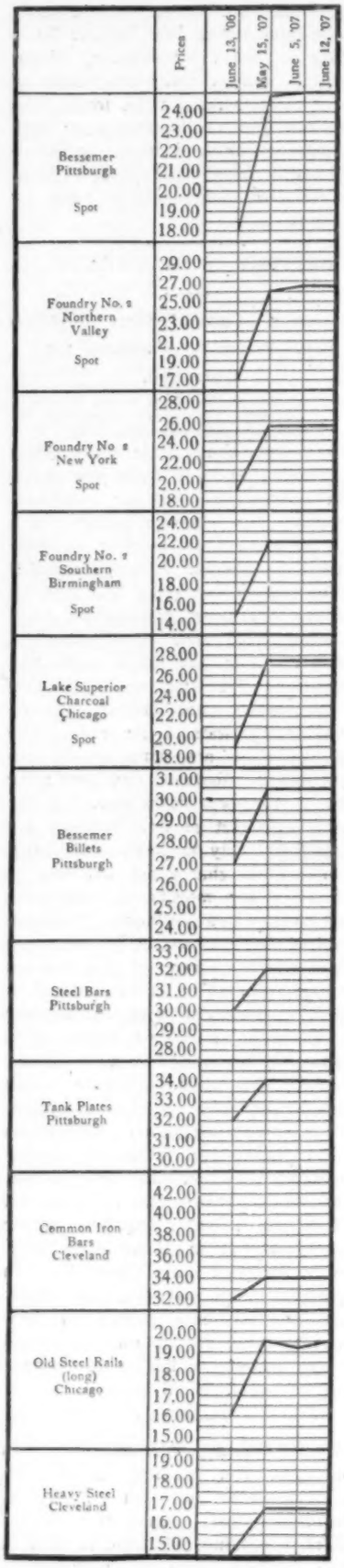
JERSEY CORPORATION TAXES.

New Jersey authorities have issued a schedule of the 1907 tax assessments against miscellaneous corporations making that state their legal home. In all, 6,181 concerns are listed. Taxes are figures on the basis of capital stock, issued and outstanding, the rate being one-tenth of one per cent up to $3,000,000, one-twentieth of one per cent on all between $3,000,000 and $5,000,000, and $50 for each million above the latter amount. Under this rating the heaviest tax payers, with the amount of outstanding capital and he amount of tax include the following:

American Bridge	$ 62,324,600	$ 6,866
Am. Shipbuilding	15,500,000	4,525
Am. Steel & Wire	90,000,000	8,250
Am. Car & Fdy	60,000,000	6,750
Beth. Steel Corp.	30,000,000	5,250
Federal Steel Co.	99,745,200	8,737
Int. Harvester Co.	120,000,000	9,750
Lake Sup. Corp.	40,000,000	5,750
National Tube Co.	80,000,000	7,750
Penn. Steel Co.	27,250,000	5,112
Pitts. Coal Co.	64,000,000	6,950
Rep. Iron & Steel Co.	48,204,000	6,160
U. S. Steel Corp.	868,583,600	47,179

The report that the Jones & Laughlin Steel Co. will build a tube plant at Lorain, O., is officially denied. The company owns a large acreage at Lorain, but has no present intention of utilizing it. The newspaper story of important changes to be made at the Edgar Thomson plant of the Carnegie Steel Co. is also officially denied.

PRICE CHART.



RECEIVERS APPOINTED.

(Continued from Page 931.)

reorganization will probably be announced in the near future.

The business is a very old one, having been established fifty years ago, by Samuel Milliken, who retired in 1883. He was the father of Foster Milliken and Edward F. Milliken, who formed the firm of Milliken Bros. in 1884. For several years previously the style had been Milliken, Smith & Co. Up to 1890 the firm of Milliken Bros. confined its attention to the iron commission business, but after that date began iron and steel contracting and installation, making rapid progress and operating in various parts of the world.

The business became so large that it was incorporated on May 17, 1902, with a capital stock of $2,000,000, which was increased to $2,500,000 in July, 1905, and again increased to $5,500,000 in January, 1906. Edward F. Milliken became president of the corporation, which was organized under New York laws; Foster Milliken, vice president, and Francis Dykes, secretary and treasurer. Edward F. Milliken died on Nov. 10, 1906, in the New York Hospital after an operation for appendicitis, and was succeeded as president by Foster Milliken, and Henry S. Manning as vice president.

In 1903 the company began the construction of the Staten Island plant, expecting that its cost would be about $3,000,000, for which amount a bond issue was floated. Later this figure was found to be much too low and the heavy drain upon the company's reserve funds was chiefly responsible for the failure. The extent of the company's holdings is well presented in a statement of President Milliken, made in connection with the sale of bonds slightly over a year ago, as follows:

"The present bridge and structural plant occupies about twenty-five acres on a plot of 165 acres of land, having a frontage of one-third of a mile directly on tidewater on the northern shore of Staten Island, New York city. The Baltimore & Ohio Railroad tracks run directly into the property. The new structural steel rolling mill plant is the only one of its kind located on tidewater and the best constructed structural steel plant in the United States. Five fifty-ton open-hearth steel furnaces are being erected with a capacity of about 126,000 net tons of finished material per year. By the addition of seven open-hearth steel furnaces, at an expenditure of $850,000, the output of the plant can be increased to 1,000 gross tons per day. The general layout is so made that the furnaces can be increased to twenty-one, which will give an output of 2,000 gross tons per day. According to appraisals made by your experts the value of our present plant is $2,034,154; estimated cost of new steel mill, $3,294,000; quick assets of the company, $864,204; total, $6,242,357. This appraisal is exclusive of the good will. The value of our real estate is here appraised at nearly $1,200,000."

In connection with the present difficulty, William N. Cromwell, counsel for the company, adds the following statement:

"The business consists of two distinct branches, one the construction and erection of bridges, etc., and the other the manufacture of open-hearth steel and rolling of the same into billets, blooms, or structural shapes suitable for use in the construction of bridges and other structural work. The bridge department has been carried on successfully and very profitably for a number of years, and this led the company to the construction of the open-hearth steel plant in 1905 and in 1906, at Mariner Harbor, Staten Island. The plant, consisting of 160 acres and modern and completely equipped bridge plant and open-hearth steel plant, is complete and in full operation. The company has contracts for the erection of buildings and bridges the world over; it has about 3,000 to 3,500 in its employment; its weekly payroll is about $50,000; its business under construction is about $5,000,000 and is of a profitable character.'

VICTORY WON

By Employers From Striking Machinists in Several Cleveland Plants.

Victory for the employers has been gained in several of the shops which were struck by the Cleveland Machinists' Union demanding a nine-hour day and a ten per cent increase of wages. The men in the employ of the Cleveland Punch & Shear Works Co., the National Acme Mfg. Co., The Lord & Bowler Co., and the Bruce-Merriam-Abbott Co., which plants are members of the National Metal Trades Association, have gone back to work unconditionally. The men have also returned to work at the plant of the City Machine Co., and several other companies not members of the Metal Trades Association. The employers' side of the present strike, in respect to the members of the Metal Trades Association, has been conducted by L. P. Thompson, of Cincinnati, representing the national organization, and Phillip Frankel, secretary of the Cleveland branch. About 30 Metal Trades shops have been affected by the trouble.

No. 3 furnace of the Sheffield Coal & Iron Co., Sheffield, Pa., was out of blast for five days during the month.

STILL GAINING

In Shipments of Iron Ore in Spite of Unfavorable Conditions.

Office of THE IRON TRADE REVIEW,
411 Providence Bldg.,
Duluth, June 10.

Despite the extreme shortage of boats during the past week due to congestion at lower lake ports, the movement of ore fell behind only in that an immense shipment would have been probable under favorable conditions. At times during the week, the docks were badly crowded with ore and loaded cars, but the despatch of the boats that were loaded was exceptionally good. On Sunday morning the unusual situation occurred of having no boats at the Missaba dock. Although some time is being lost this week on account of rain, a large number of boats are expected in the next few days and a movement from the head of the lakes of about 1,200,000 tons seems likely this week. The dock reports for the first seven days of June show the following shipments: Duluth, 430,736 tons in 1907, against 317,059 tons in 1906; Two Harbors, 294,876 tons in 1907, against 249,979 tons in 1906, and Superior, 289,352 tons in 1907, against 191,540 tons in 1906, an aggregate movement during the week this year of 1,014,964 tons against 758,578 tons last year. The shipments from the Gogebic range through Ashland have been gaining, but are not yet up to the corresponding figures last year owing to the delay in opening.

The mining interests of Michigan that for some time past have been seeking the removal of the legal restrictions preventing the ownership by them of more than 50,000 acres of land have obtained the desired change in the laws. Under previously existing conditions, the ownership of adequate timber reserves for supplying the mine timber necessary in both the iron and copper mining districts was impossible owing to the limited acreage each company was permitted to own. The Cleveland-Cliffs Iron Co., Pittsburg & Lake Angeline Iron Co., and the Oliver Iron Mining Co., through their Ishpeming offices were largely responsible for the results obtained.

The favorable reports issued concerning the Shagawa mine in section 30 and the developments at the Soudan mine have renewed exploring activity on the part of a number of land owners of the Vermillion range. Drill work is being undertaken near Ely in 33, 63-15, also in 16, 62-13 and north of Vermillion Lake in 36, 63-15. An abundant faith in the future of the Vermillion range is held by the men who own and are buying property in that section, but the problem of locating ore remains, as it has always been, both difficult and uncertain.

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OUR HEAVY STRUCTURAL STEEL EXPORTS.

In no branch of our finished steel trade have exports increased so rapidly as in structural material. The exports of shapes and fabricated material in the 10 months ending April last amounted to 103,799 gross tons, a greater total than has been shown in any whole fiscal year in the past, and indicating that the exports for the full fiscal year ending this month will total about 130,000 gross tons. This would be double the tonnage of any fiscal year previous to 1905.

The exports of structural material have been as follows:

Fiscal year.	Gross tons.
1898	30,586
1899	49,069
1900	56,265
1901	64,820
1902	61,190
1903	32,952
1904	35,892
1905	73,287
1906	97,668
1907 (10 months)	103,799
1907 (year estimated)	130,000

This showing is the more remarkable, in that iron and steel exports in general are a trifle under the rate of a year ago. The total exports of all materials of which the weight is returned, in the 10 months ending April were 1,044,000 gross tons, against 1,087,000 gross tons in the 10 months ending April, 1906, and 1,331,000 tons in the full fiscal year ending June, 1906. While exports in general show a slightly less rate, structural exports have been greater for 10 months than for the previous 12-month period.

The establishment of a new tidewater plant for the manufacture and fabrication of shapes has undoubtedly helped the exports, while a look at the destination of the exports shows that they are quite largely to markets which are naturally ours. More than half the total goes to British North America. Of the 103,799 gross tons exported in the 10 months ending with last April 79,203 tons, or a trifle over three-fourths, went to British North America, Mexico, South America, Cuba and the Philippines. The distribution was as follows:

Ten Months' Structural Exports.	Gross tons.
British North America	53,669
Mexico	12,288
Cuba	4,530
South America	6,361
British East Indies	55
Japan	8,950
British Australasia	2,354
Philippine Islands	2,355
Other countries	13,237
Total	103,799

The American structural trade has a distinct advantage over its foreign competitors, which has long been recognized. Years ago fittings were standardized and an American fabricating concern can make estimates and deliveries in much shorter time than can any of the foreign producers. It is a business in which heavy machinery is particularly advantageous in making large reductions in costs by eliminating hand labor.

FURNACE COKE CONTRACTS FROM WISE COUNTY DISTRICT.

While it is not a matter of importance as affecting the general situation, it is interesting to note that the furnaces in the south that use Wise county coke, either entirely or to augment their supplies, are making new contracts now on the basis of flat prices rather than on the sliding scale basis. Expiring contracts were nearly all based on a sliding scale for pig iron. This basis brought the coke prices up to from $4.00 to $4.50 per ton, while the new contract prices are around the $2.50 mark. This will mean that the coke supply for many southern stacks will cost them $1.50 to $2.00 per ton less for the last half of the year than for the first half. These sliding scale coke contracts have been a sensitive point with southern furnace men. The contracts were not satisfactory, as they were necessarily based on spot prices of pig iron, which, in times of prosperity, do not represent the prices at which rates for future delivery are made.

The prospects are that pig iron will average to the southern furnaces, for the second half of the year, $18 per ton or better, and with this saving in the coke cost, there should be but little for them to complain of. It may be mentioned in passing, however, that the lower cost of coke will have a tendency to even up matters, as the price that they have been compelled to pay for coke on the sliding scale was surely a hardship.

PRICE FLUCTUATIONS AND COST SHEETS.

Towards the close of the boom of 1899-1900 and again towards the close of the era of strong demand and prices in 1902-3 some fallacious reasoning was indulged in. As will be well remembered, prices of finished steel products were established at certain levels in both movements, and thereafter there were further advances in pig iron and unfinished steel. Then, as these latter more fluctuating commodities began to decline, the argument was frequently put forth that a reasonable decline in them did not necessarily foreshadow any decline in the level of finished materials; that the cruder materials could decline to the level they held when the structure of finished material prices was built, without endangering its stability. It could be granted that there had been in the first place a proper relation between prices of crude materials, on the one hand, and prices of finished materials on the other. Then, if the former advanced

without the latter, why could they not also decline without the latter?

Time showed that the reasoning was fallacious. When the cruder materials declined, the declines were followed ultimately by declines in the finished products. There was no chance, but the working out of commercial principles. Every manufacturer knows that it is the time of stress which shows him the most as to what he can do with his cost sheets. Usually it is the time of depression which is the time of stress, but to the manufacturer not possessed of raw materials it is frequently the time of extreme prosperity which produces the condition of greatest stress. To such a manufacturer the word prosperity does not mean all the dictionary would have him believe. The necessity of reducing costs is forced upon him, and he learns better than in times of moderate "prosperity" how close can be the margin between raw materials and finished products to leave him a profit or at least avoid a loss.

A new basis of costs is thus produced when the lines of cost of raw materials and selling prices of finished products run closest together, and the new basis is the one figured upon when raw materials decline and, perchance, the manufacturer is forced to make a stronger bid for new business. It is found that with raw materials back again to the old basis, the finished product can be turned out a little more cheaply, and then comes the tendency to cut prices.

It is well known that every great price movement teaches new lessons to the manufacturer and establishes new conditions. In the great movement of 1893-8 the line indicating selling prices of products did not indicate the movement of profits of the manufacturers making them. Prices fell almost steadily until practically the close of that period, yet profits began to increase long before it was over. Lessons were learned of economy in manufacture not thought of until the stress, continued year by year, forced manufacturers to learn them. It is so with every great price movement. There is much to learn and much to unlearn.

The Colorado Fuel & Iron Co. blew in its new furnace F on May 2.

VALUE OF CONCENTRATION

Shown by World's History, Said Col. Bope at Youngstown Banquet.

At the annual dinner of the Youngstown Chamber of Commerce Tuesday evening, June 11, Vice President H. P. Bope, of the Carnegie Steel Co., spoke in part as follows:

It must not be forgotten, although it is too often overlooked, that there has been a revoluion in the conduct of business in the past six years to which little importance has been attached by the mere theorists. Concentration has been the order of the day. Great statesmen have not been slow to carry out the idea in matters of government, however much they have hypocritically deplored the evils of this revolution in matters industrial and economic. With the growth of the country and its increasing demands, it was not possible that such demands could be supplied under the old conditions. Larger works, greater productions, increased capital, larger organizations were needed to meet the growing wants of the country, and these could never have been supplied by the individual as such. To obtain the results the country required for its development it was necessary to change the methods of doing business, and so came about, through natural causes, even if men did take advantage of them to work some evil, the new order of things in matters of business. It would be idle to deprecate such a condition. The world has seen many developments; it has seldom gone backward, and its civilization has been promoted in very few cases by individuals, but always by concentrated effort.

During that period which we know as the dark age of history, literature,—civilization itself, was preserved by the bodies of men who were associated together in the monasteries and in the monastic orders for the preservation of those things the life of which was threatened by the barbaric irruption.

England never obtained its commercial greatness under individuals, but through the concentration in those institutions known as the East and West Indian Trading Companies and their successors, the Trade Unions, which provided the necessary capital which individuals could not swing; promoted England's commerce and through that commerce assisted in the greater civilization and development of the world generally.

Canute, when he rebuked his obsequious courtiers in showing the folly of forbidding the tides to cease to rise, taught a lesson which some of our shortsighted statesmen have failed to understand.

This development, called the corporation, was bound to come. It was in the natural order of things. The world was ready for it, and the world must accept it. It is not out of place, therefore, not only from the established order of things, but from the standpoint of the individual interests of your thriving city, that I may speak a word with reference to the Steel Corporation, the largest aggregation of capital in a single institution, the greatest employer of labor, the most conservative in its management, of any institution of a similar character the world has ever seen. In its regard for law it has set a worthy example for all organizations of any kind; in its regard for the rights of its employes it stands second to no other organization in the world; in its desire to maintain friendly relations with its customers it has been ever fair and reasonable, and no better illustration of its policy can be given than to point to the conservatism with which it has maintained prices, seeking only a fair return upon capital invested, and willing that others should obtain profitable returns also. It has never sought to injure a competitor, but more frequently than could even be deemed reasonable has it conserved their interests by action taken of various kinds, at times even better for the competitor than for itself. Its management has been enlightened, and it seeks in its relations with its workmen to better their conditions, and to stand in every community in which it is represented, for the best there is in economical management.

As to the future, the great central valley lying between the Alleghenies and the Rockies will, for a considerable period of time, be that in which the growth of the country will be most noticeable, and its requirements the greatest. With such management as is today to be found in this great industry there will be no violent fluctuations in trade, such as have been witnessed in the era preceding the present one of concentration, because these great corporations stand for conservative action. At the rate the country is growing there can be no cessation of demand, although it is expected that as the tides ebb and flow, so will business advance and recede with changing conditions. Business will advance and recede but its recessions will not be so great in future as its advances. This means for continued prosperity in which this community will share along with its sister cities. Our interests will grow stronger as our properties are increased, and we expect that you will share in our fortunes as we shall aid in the conservation and promotion of yours.

Additions to Foundry.—The Superior Foundry Co., Cleveland, at present employing about 600 hands and doing an extensive business in the manufacture of piano plates and jobbing work, melting about 85 tons daily, is about to erect an extensive addition to its plant, which will double the capacity of the piano plate department, which at present is 250 plates per day. The buildings to be erected comprise a foundry 176 x 190 feet, a trimming room 146 x 55 feet, and a fireproof storage vault 26 x 48 feet. An 84-inch Whiting cupola will be installed in the foundry. The buildings will be of steel and concrete construction with monitor roofs and will be erected at the rear of the present plant at East Seventy-first street and the Wheeling & Lake Erie railroad. The addition was designed by Raymer T. Hanford, constructing engineer, Sharon, Pa.

MINNESOTA STEEL CO.

Is Incorporated With Large Powers. —Officers and Board of Directors Chosen.

(Special Telegram.)

Duluth, Minn., June 11.—Articles of incorporation of the Minnesota Steel Co., under which name the Duluth plant of the United States Steel Corporation will operate, were filed in St. Paul this morning and will be filed at Duluth tomorrow. The company was organized June 10, authorized capital $10,000,000, with limit indebtedness the same. The company is authorized to manufacture iron, steel, coke, copper, lumber and other materials, to own, lease and develop lands containing coal, iron, manganese or other ores, stone and oil, and to mine and remove any of same; to construct bridges, ferries and docks, build manufacturing plants, wharves, elevators, mills, waterworks, gas works, electric works, railways, roadways; to manufacture and deal in cement, lime and limestone, artificial stone, all kinds of coal, wood, coke, fuel, and other oils, to deal in personal and real property; own stocks, bonds and securities of other companies and generally to carry on a mercantile, trading, lumbering, mining, mechanical, transportation, shipping and manufacturing business. The principal place of transacting business is to be Duluth, and the company has power to have offices and transact business in all other states and territories of the United States and in foreign countries. The corporation is organized for a term of 30 years with right to be renewed from time to time for further periods of 30 years. The incorporators are: Thomas F. Cole, William J. Olcott, Frank E. House and Joseph B. Cotton, of Duluth. Officers, until the annual meeting to be held June 2, 1908, are: William B. Dickson, New York, president; Geo. L. Reis, New York, vice president; William J. Filbert, New York, secretary and auditor; Richard Trimble, New York, treasurer, and George D. Swift, Duluth, assistant secretary and treasurer. The first board of directors consists of Judge Elbert H. Gary, William E. Corey, William B. Dickson, William J. Filbert, Richard Trimble, all of New York; Thos. F. Cole, William J. Olcott, Joseph B. Cotton and George L. Reis, of Duluth. Geo. L. Reis, of New York, who will move to Duluth and have charge of the building of the plant, was formerly manager of the Milwaukee plant of the Illinois Steel Co., and later of the Lackawanna Steel Co., Buffalo. The building of the plant is to be pushed as rapidly as possible. Details of plant and location of site are not yet available.

AMERICAN HARDWARE MANUFACTURERS MEET.

The twelfth convention of the American Hardware Manufacturers' Association is now in session at the Hotel Jefferson, Richmond, Va., at which place the Southern Hardware Jobbers' Association is also meeting. Arrangements for the former convention were completed by F. D. Mitchell, 309 Broadway, New York, as

F. D. MITCHELL.

secretary-treasurer of the association. Mr. Mitchell is also secretary-treasurer of the American Supply and Machinery Manufacturers' Association, thus being identified with these two closely related organizations of manufacturing interests. He played a prominent part in the recent Cincinnati convention of the National and Southern Dealers' and the American Supply and Machinery Manufacturers' associations, one evidence of his originality there displayed being the convention badge, with the organization to which the bearer belonged designated by a special color of ribbon, and cross-bar showing his name and business connection. Mr. Mitchell has been extremely successful in furthering the interests of the two organizations which he serves. The last issue of THE IRON TRADE REVIEW presented the extensive list of concerns he has enrolled in the machinery association during the past few weeks.

OBITUARIES.

Major M. S. Hasie, president of the Texas Bridge Co., Dallas, Tex., died in that city May 30, aged 66.

A. P. Sibley, president and manager of the Sibley Machine Tool Co., South Bend, Ind., manufacturer of power drills, died May 25.

John A. Lang, a prominent manufacturer of Erie, Pa., died recently in that city at the age of 51 from heart trouble. After engaging in several lines of manufacture, Mr. Lang in company with others organized the Williams Tool Co. six years ago, and that concern is today one of Erie's most flourishing institutions. Mr. Lang was secretary and treasurer of the company at the time of his death.

Roderick Cochrane, for years prominently identified with manufacturing interests in Michigan and Canada, died recently at the home of his son in Washington, D. C., aged 70 years. He had extensive interests in Ionia, Mich., as a member of the Cochrane Fence Machine Co. and other companies. Before coming to Detroit in 1887, he was a partner in the firm of Cochrane Bros. and later Haggers Bros. & Co., manufacturers of harvesting machinery, with plants at Hamilton and St. Thomas, Ont. Up to the time he was stricken with the illness brought on by his advanced age he was manufacturing in Worcester, Mass., an improved process for melting iron.

Production of Coal.—The total production of coal in the United States in 1906 was 414,039,581 tons, valued at $512,610,744, according to the statistics compiled by Edward W. Parker, of the United Geological Survey. This output is an increase of 21,120,240 tons in quantity, and an increase of $35,853,781 in value, compared with the previous year, when the totals were 392,919,341 tons and $476,756,963 respectively. The output of Pennsylvania, the leading producing state, was 71,282,411 tons of anthracite and 129,263,673 tons of bituminous coal.

Profits Increase.—The Barney & Smith Car Co., Dayton, O., in its report for the year ended March 31, 1907, shows net profits of $602,030, after charging off $38,203 for depreciation, an increase of $62,766. The undivided profit account on April 1, 1907, shows a credit balance of $325,582 after bond interest and dividends had been charged.

OPEN SHOP PRINCIPLE

Maintained on the Pacific Coast.—Conditions of Strike Settlement.—Labor Notes.

(Special Correspondence.)

San Francisco, June 1.—As stated in a telegram to THE IRON TRADE REVIEW last week, the strike of the iron workers in San Francisco is settled, and the men have returned to work. They have gained nothing through the strike. On the contrary, they have even forfeited the five per cent advance offered them just three days before the strike was called. Now they return at the wages prevailing before the strike, the same working hours, and the open shop system. Sixteen crafts and 28 unions are involved in the settlement, whose members were either called out by their unions, or were locked out when the shops closed after a short experiment with the eight-hour day. The international officers who came to San Francisco intending to assist their unions in the fight for the eight-hour day, soon learned that it was wiser to accept any kind of a settlement rather than remain on strike indefinitely. Those men also went to Portland, Ore., where the Pacific Coast Metal Trades Association met, were unable to gain anything for their cause and learned, further, while in the northwest that the employers of that section of the country are strong for the non-union shop. They also learned that the employers of San Francisco had increased the pay of their men 10 per cent immediately after the great fire of one year ago, and had been held up by employes constantly without the sanction of union or council, but actuated simply by scarcity of mechanics and the great rush of emergency work, until the limit was reached.

The international officers surveyed the situation carefully and prevailed upon the union leaders in the fight to reconsider the demands and let the men return to work upon any reasonable terms. Had they not acted promptly, there was danger of strengthening the sentiment in favor of the non-union shop throughout the coast.

It has been fully demonstrated that the eight-hour day cannot be established in San Francisco at present, and it was therefore decided to begin with lopping off fifteen minutes at a time, commencing eighteen months hence, and taking off fifteen minutes after the expiration of six months. At this rate the eight-hour day will become operative after June 1, 1910, if the years of test shall justify that course.

The return of iron workers has had a beneficent effect upon building and other industries in San Francisco, which has suffered seriously from industrial disturbances within the past month.

Labor Notes.

The striking boilermakers at Boston returned to work June 3 on the same basis in force when they went out. The men will doubtless receive the increase they were granted before going on strike, reports the Boston branch of the National Metal Trades Association.

The Providence Engineering Works, Providence, R. I., has posted a notice granting an increase of 2 cents an hour to those employes in the machine shop now receiving 24 cents or less and an increase of 3 cents an hour to those receiving 25 cents or more. It is stated that no agreement or contract has been signed with the union and that no change in working hours or conditions of employment has been made.

Molders and coremakers employed at the plant of the Pennsylvania Engineering Works, New Castle, Pa., struck recently for the Pittsburg rate of $3.50 per day for molders, the present rate being $3.20. This is the same demand that is being made by the men in Youngstown for an agreement effective July 1.

Seventy-five members of the Pittsburg lodge of the International Association of Machinists, employed at the McKees Rocks plant of the Pressed Steel Car Co., quit work June 4, owing to the failure of the company to deal with the organization. A number of the men employed at the Allegheny plant, Woods Run, have been out for several weeks.

The members of the foundrymen's union, Des Moines, Ia., have gone on strike to enforce their demands for a 25-cent increase. About 55 men are affected. When the men went out they were receiving $2.75 per day.

In a handsome booklet calling attention to the extensive stove industry of St. Louis and declaring that city to be the largest stove-making center in the world, the Buck's Stove & Range Co. presents a very interesting account of daily operations in its immense plant. Many views of the plant from the president's office to the foundries are shown as well as photographs of those responsibly associated with the company. Striking facts regarding St. Louis' industrial activities are given.

ALL STEEL PASSENGER EQUIPMENT IS ORDERED.

The Pennsylvania's order for all-steel passenger equipment consists of 150 passenger cars, 20 baggage cars and 5 combination passenger and baggage cars. The American Car & Foundry Co. will build 90 of the passenger cars and the remainder will be built by the Pressed Steel Car Co. Other equipment contracts awarded include the Atlanta, Birmingham & Atlantic railway to the South Atlantic Car & Mfg. Co., for 900 coal cars and 30 cabooses, and to the American Car & Foundry Co., for 500 box cars and 300 flat cars; the Illinois Central railway to the American Car & Foundry Co. for 500 steel dump cars.

Railroad Notes.

Double-track construction on the Union Pacific has been undertaken this year on a large scale. To the 175 miles of double track in operation between Omaha and Green River, Wyo., will be added 200 miles of second track now under construction. The work between South Omaha and Lane, Neb., although only 11 miles in length, is the biggest engineering feature of the improvement. This line necessitates 3,000,000 cubic yards of roadbed excavation, and calls for fills of from 300,000 to 1,400,000 cubic yards. By the end of 1907, the Union Pacific will have a continuous double track in operation from Council Bluffs, Ia., west, a stretch of 194 miles.

For the year up to June 1, 1907, the Pennsylvania railway hauled 15,639,517 tons of bituminous coal, 5,877,542 tons of coke and 2,337,056 tons of anthracite, a total of 23,853,115 tons on its lines east of Pittsburg and Erie. For the same period last year the total was 20,365,909 tons.

C. J. Duffy, purchasing agent of the Hocking Valley railway, is preparing to place an order for a large amount of machinery for the iron-working department of the new shops of the company that are being erected at Logan, O. An order was recently placed for the machinery for the wood department.

John Kerfoot Bryden, prominent in Pittsburg's financial and industrial circles, died recently at the age of 52. Until its absorption by the United States Steel Corporation, Mr. Bryden was a director of the Sharon Steel Co.

The plant of the Federal Furnace Co., 108th street and Calumet river, Chicago, was severely damaged by fire May 29.

MAY ESTABLISHES RECORD IN PIG IRON OUTPUT

Responding to the unusually strong conditions prevailing in the pig iron market, blast furnace operators have tested the productive limits to their plants during the month of May, and have succeeded in establishing a new record of monthly output in the United States. The total production of pig iron in the United States in May reached 2,291,030 tons, representing an increase of 64,322 tons over April, when the total was 2,226,708 tons.

The May tonnage, while now the record of the country, will probably not reproaching the maximum is shown by the column "Percentage of Total Possible Output Made" in the appended table. Of the states which are large producers, Ohio particularly shows a splendid record, with a tonnage of 92.9 per cent of its total possible output, while the group containing Maryland, Illinois, Wisconsin and Colorado is also very high in its output with 91.3 per cent.

BLAST FURNACE NOTES.

Furnace A of the Wisconsin Steel Co., which was blown out on March

MAY FURNACE REPORT.

STATE	NO. OF STACKS	NO. IN BLAST ON LAST DAY OF MONTH		PERCENTAGE OF TOTAL POSSIBLE OUTPUT MADE	AV. DAILY CAPACITY IN BLAST LAST DAY OF MONTH	ACTUAL TONNAGE MADE		TOTALS	
		APRIL	MAY			MERCHANT	NON-MERCHANT	APRIL	MAY
Pennsylvania	150	133	133	88.3	32,024	241,419	778,441	1,000,933	1,019,860
Ohio	60	56	56	92.9	15,299	148,636	323,553	472,169	472,189
Alabama	46	30	30	64.8	4,920	128,715	22,950	142,384	151,665
Virginia	22	19	19	83.4	1,584	46,223	———	46,297	46,223
New York	24	18	18	79.0	4,419	65,896	71,133	142,241	137,029
New Jersey	10	9	8	72.7	970	30,099	———	30,133	30,099
Tennessee		18	13	12					
West Virginia		4	4	4	63.6	2,644	36,895	36,202	73,525	73,097
No. Carolina		1	0	0					
Kentucky		8	6	6					
Maryland		4	4	4					
Illinois		24	21	23	91.3	10,334	52,264	253,921	267,231	306,185
Wisconsin		6	4	5					
Colorado		6	4	5					
Georgia		2	1	1					
Texas		2	1	1					
Minnesota		1	1	1	70.2	767	22,092	162	21,508	22,254
Michigan		2	2	2					
Missouri		1	1	1					
Spiegel—All states								20,848	16,095
Ferro—All states								9,439	16,334
Totals	391	327	329	——	72,961	772,239	1,486,362	2,226,708	2,291,030

main so for any great length of time, as few stacks are being blown out, and the present tendency is to get every stack possible into the running. During May but two stacks were blown out for any length of time for repairs, while five stacks joined the list of the producers, one of these being the new furnace F of the Colorado Fuel & Iron Co. and another the Victoria furnace of the Goshen Iron Co., which had been idle for about a year.

Divided as to the consumption, 1,486,362 tons of the May output went to the mills and foundries of the producers, while 772,239 tons were offered for sale in the open market. The average daily production of the 329 stacks of the country in operation on May 31 was 72,961 tons, which also establishes a new high mark for furnace activity.

How closely the production is ap-

22 to rebuild the stock bins and for relining, was blown in on May 4.

The Cranberry furnace of the Cranberry Furnace Co., Philadelphia, went out of blast for relining on May 11.

The Marshall furnace of the Juniata Furnace & Foundry Co., Newport, Pa., was blown out on May 3 and was blown in again on May 31.

The Stewart furnace of the Stewart Iron Co., Sharon, Pa., was out of blast 18 days during May on account of a slip. It is now working properly.

The Wellston Iron & Steel Co., Wellston, O., has blown in its idle stack.

The Shelby Iron Co., Birmingham, Ala., proposes to change one of its furnaces which is running on charcoal iron to make coke iron. Details have not yet been decided.

No. 2 furnace of the Roane Iron Co., Rockwood, Tenn., was blown out for repairs.

The Rockdale furnace of the Rockdale Iron Co., Rockdale, Tenn., blew in on June 1.

The Victoria furnace of the Goshen Iron Co., Wilmington, Del., blew in on May 13 after an idleness of about one year. This furnace is making a high grade foundry iron for Rich Patch ores.

The B stack of the Mayville furnace of the Northwestern Iron Co., Milwaukee, Wis., was blown in on May 2.

The South Works stack No. 1 of the Illinois Steel Co., Chicago, was blown in May 9.

SMALL PROFITS

Are Worrying the British Ironmasters.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., May 29.

The British ironmaster is worried at present not so much by lack of trade as by the diminution of profits. The prices of finished iron are very far from maintaining a parallel with the advances in pig iron. Some slight increases are being obtained, but they leave the margin of profit much too narrow. Some of the best houses are booking unmarked bars at 5s above recent figures; but to many makers the standard figure of £7 10d is an impossibility. Combination is badly wanted, but at present is quite out of the question. Demand also is not good enough to keep all the sheet mills in operation and quite a number of mills in the district are partially or wholly idle, and the same reports are forthcoming from the great mills of South Wales. In this branch, production has greatly increased lately, the two greatest makers being able each to turn out 1,500 tons of sheets per week. A rather more cheerful sign is an increase in strip iron which has been formally declared during the past few days. The increase is 5s per ton, making the basis price £7 15s, with £7 17s 6d for small lots. It is expected that the tube trade will increase their prices pro rata, though competition in this line is very keen.

The ascertainment of selling prices under the Northern Wages Board, which has just been issued, leaves wages unchanged. The return covers March and April, and shows a total output of 11,808 tons, an increase of 359 tons on the previous two months.

NO LONG LISTS

Of Machine Tools, but Business Continues Good—Delayed Deliveries.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St.,
New York, June 11.

In machinery and machine tool lines the local situation manifests little change from that reported a week ago. There is still an absence of extensive lists, especially for special tools, but the marked activity in general lines is going far toward making up for the lessened buying by railway and industrial interests. Export business is not playing an important part in the present market; in fact, authentic reports from abroad are that the demand has lessened considerably of late, the change being attributed to the generally lower momentum of manufacturing affairs. In domestic business, however, the sales manager of a large manufacturing concern, whose interests are sufficiently wide to afford an accurate view of the entire field, declares that in neither the purchasing nor selling departments is there evidence of the much-discussed let-up. The demand is strong all along the line, deliveries are no shorter, except in isolated cases, and collections are satisfactory.

"Our prices have advanced 10 per cent during the past six months," he said, "while our competitors have adhered to their old prices, yet we can discover no lessening in the demand. That basketful of letters represents about half of this morning's inquiries and there's meat in every one of them."

That deliveries are still far in the future, and that there is a brisk demand for anything which can be shipped promptly is evidenced by an incident of the past week. Some six months ago a local dealer took an order for a No. 2 milling machine, to be finished in a particular shade of gray. When it was delivered a few days ago, this shade was found not to be identical with other tools in the shop and the purchaser was not satisfied. The dealer gladly took the machine, placed it in stock, and within twenty-four hours disposed of it at an advanced price. On the other hand, however, there are some concerns which are finding conditions considerably less active, as compared with those of some months ago. The opinion is general that no further price advances will be made, and it is also improbable that the early future will witness any reductions. Neither the Seaboard nor Norfolk & Western lines are ready to close contracts on lists recently sent out. No new railway business has developed, except for a list of about a dozen tools sent out by the Pennsylvania. The demand for wire rope has become extremely heavy of late, due to the opening of summer contracting work.

The ground floor of the new West Street Building, 90 West street, which houses a large number of machinery and engineering firms, is now practically all occupied. The large room on the Cedar and West street corner has been fitted up in handsome style by Wickes Bros., formerly at 137 Liberty street. Across the lobby on the West street side the A. Leschen & Sons Rope Co., formerly located at 163-165 Washington street, has established offices and warerooms. An extensive stock of steel rope is being installed in the ample quarters on the ground floor and in the basement. On the Cedar street side the Sirocco Engineering Co. has taken quarters, coming from 22 Thames street. A large, well-lighted room adjacent is occupied by Hill, Clarke & Co., formerly located at Greenwich and Clark streets. About 2,400 feet of floor space is available, and the stock is practically all in, being arranged in a particularly attractive manner. Another recent arrival in the building is the Goubert Mfg. Co., coming from 95 Liberty street.

Manning, Maxwell & Moore, Inc., 85-89 Liberty street, are having extensive alterations made to their offices on the first floor at that location. This company is also preparing to erect a brick and steel storage warehouse, 110 x 260 feet, near the freight house of the New Jersey Central in Jersey City. This will be of heavy construction for the storage of large lots of machinery.

Although not yet able to occupy all of its new quarters at 91-93 Liberty street, the Vandyck-Churchill Co. is now comfortably installed at that location and is using about half of the display space which will be available on the completion of the building. The offices of the company are unusually attractive and its store room will permit the carrying of a large stock, displayed to best advantage.

Freighter Ordered.—Buffalo parties have closed a contract with the American Ship Building Co. for a freighter of about 8,500 tons capacity to come out at the opening of next season. The new boat will be 520 feet over all, 500 feet keel, 52 feet beam and 28 feet deep. It is stated that the steamer will be handled by Brown & Co., Buffalo.

IMPROVED DELIVERY

Noticed in Chicago Machinery Lines —Steel Rail Agitation.

Office of THE IRON TRADE REVIEW,
1362 Monadnock Block,
Chicago, June 11.

Improvement in deliveries, the result of the recent slackening in trade, has been observed by local dealers in machine tools on Canal and Clinton streets. The change has been more apparent in punching machinery, shears, and heavy tools than in milling machines, planers, and lighter tools. Dealers still complain of the difficulty of getting stock, and are not satisfied with the conditions.

Except in wood working machinery the demand is smaller than it has been, although dealers say that it is heavy for this time of year. In wood working machinery the sales have been heavy and the slump expected with the approach of warm weather has not appeared. Second-hand machinery continues to be in demand.

Railroads have not come into the market extensively and no large lists have been placed. Purchases are made from time to time. No heavy specifications have been sent to local dealers.

The agitation by railroads against the present system of manufacturing steel rails is being continued by railroad men in Chicago. Figures are being compiled by several of the roads with headquarters in Chicago comparing the number of wrecks ascribed to defective rails during the past two or three years with the corresponding periods of ten years ago.

W. B. Jansen, vice president of the Santa Fe, said: "For several years the Atchison has been a persistent protestant against the quality of steel rails produced by the manufacturers. It has conducted a number of tests to determine quality, causes of defects, and any possible remedies. In my opinion there is no excuse for the production of an inferior article. I feel confident that changes will be made in the methods of manufacturing."

F. A. Delano, president of the Wabash, said: "There is no doubt that the railroads are sadly in need of a better rail. We have gradually been putting an extra duty upon rails, and the burden has gotten to a point where the rails are insufficiently strong to bear it. It is not generally known that the strain on an 80-pound rail with the same load is often greater than on a 60-pound rail. The lighter rail corresponds more nearly to the inequalities of the track, being more pliable."

C. A. Goodnow, general manager

of the Alton, said: "We have not been getting the results out of the present day rail that we should. One reason for this is that the 60-pound rail of former days was run through the rolls at least 14 times, while the modern rail is not put through more than seven times. Practical rail men tell me that steel rail making is like bread making, the more you knead the dough the better the product."

The Monarch Motor Car Co. announced the purchase of 15 acres in Chicago Heights for the erection of a new plant. Several buildings will be erected, the largest to have a ground space of 300 x 500 feet.

The incorporation of the Centralia & Sandoval Railway Co. was announced last week by the secretary of state. The principal office is to be in Centralia, Ill. The announced intention of the incorporation is to construct a railroad between the two towns. The incorporators who are also given as the first board of directors are: W. M. Warnock and George D. Burroughs, of Edwardsville, Ill.; Ed. R. Liet and Frank Nolan, Centralia, Ill., and Fred E. Allen, St. Louis, Mo.

Three men were fined in Freeport, Ill., last week on the charge of conspiracy to restrict competition in the letting of bridge contracts. William H. Shons was fined $4,000, Homer Shons, his brother, was fined $400, and A. P. Winnegar, of Madison, Wis., representing the Hennepin Bridge Co., was fined $350. The fines follow the charges made last March that a bridge trust had been organized to control the erection of bridges through Illinois and Wisconsin.

The C. A. Smith Land & Lumber Co., of Las Vegas, N. M., purchased a complete equipment from the Chicago Machinery Exchange last week. The company was organized recently and the equipment is to be installed in a new plant. The machinery was all woodworking tools.

The Allegan Furniture Co., of Allegan, Mich., which was organized last month, bought an equipment of wood working furniture tools. Equipment was also purchased by the Rogers Wade Furniture Co., of Paris, Tex.

The Tropenas Steel Co., Philadelphia, has been organized under the laws of Delaware with a capital of $750,000. A tract of 90 acres of land near New Castle, Del., has been purchased, and work will be commenced at once upon the erection of a steel foundry for the production of a general line of small castings. The foundry will be equipped with Tropenas converters.

LARGE SURPLUS

Shown by Sloss-Sheffield Steel & Iron Co. in First Quarter.

(Special Correspondence.)

Birmingham, Ala., June 10.—The quarterly meeting of the directors of the Sloss-Sheffield Steel & Iron Co. will be held this week in New York. The usual dividend of seven per cent on preferred stock will be declared. President J. C. Maben, before leaving Birmingham for the meeting, gave out the following statement of earnings of the company for the quarter ending May 31, 1907, with the month of May estimated:

Profits from operations		$592,493.95
Deduct 3 months' interest on bonds	$52,500	
Deduct 3 months' proportion of taxes	9,810	62,310.00
Net		$530,183.95
To pay 3 months' dividend on preferred stock at 7 per cent	$114,000	
To pay 3 months' dividend on common stock at 5 per cent	125,000	239,000.00
Surplus for quarter		$291,183.95

MACHINISTS' STRIKE

Begun at Toronto—Legal Action Arouses Interest—Canadian News.

(Special Correspondence.)

Toronto, Can., June 8.—In accordance with the decision reached at a meeting the members of the machinists' union in Toronto and Toronto Junction struck June 8. The officers of the union claim that 1,200 men have quit work. The principal establishments affected are the Canada Foundry, Polson Iron Works, Canadian Shipbuilding Works, W. & J. G. Greey, John Inglis & Sons, Dodge Manufacturing Co. and Canadian Cycle & Motor Co. J. G. Merrick, secretary of the Employers Association, states that there will be absolutely no concessions by the employers. The men demand a nine-hour work-day with half holiday on Saturday, or 50 hours per week in place of a 10-hour day, with wages on the same basis per week as at present and double pay for all overtime. They also ask the limitation of the number of apprentices to one for each shop and one additional for each five men employed.

Chief Justice Falconbridge on June 5 made an order in the case of the Metallic Roofing Co., of Toronto, against Local Union No. 30 of the Amalgamated Sheet and Metal Workers' Union, which may be an important precedent. Some time ago the company sued the union for damages occasioned to its business by picketing, etc., during a strike. The damages awarded not having been paid, the court appointed the plaintiffs receivers until June 30, of all moneys, tolls or fees, payable to the union, or its officers, agents or members acting on its behalf.

The National Transcontinental Railway Commission is advertising for tenders for 65,371 gross tons of 80-pound steel rails, open-hearth or Bessemer, and the necessary fastenings, tenders to be in by June 25, and also for five steel bridges.

Columbia's Summer Courses.—Columbia university, New York, announces that its eighth summer session will open Tuesday, July 9, and continue until Saturday, Aug. 17. Civil engineering courses are offered in hydraulics and structures, with particular attention to concrete, steel, and mechanical engineering courses in gas engine work, general experimental engineering and hydraulic laboratory work. A change has been made at the university whereby the testing laboratory becomes a part of the civil engineering department. A 400,000-pound Olsen machine was recently purchased, and it is the intention to add a 500-ton machine for testing full-size compression and tension members 25 feet long, a large torsion machine, an impact machine and a wide assortment of similar equipment.

Adds to Surplus.—The United States Cast Iron Pipe & Foundry Co., in its report of operations for the 11 months ending April 30 last, in connection with its securities being transferred from the unlisted to the listed department of the New York stock exchange, shows total receipts of $1,847,125, which, less interest on bonds, reserves for improvements, doubtful accounts, etc., and dividends of $1,375,000, leaves a surplus of $45,167. The previous surplus was $506,208, so that the present surplus stands at $551,375. The condensed general balance sheet, as of April 30 last, shows total assets of $30,820,934.

Revenue Is Increased.—The report of the Columbus-Hocking Coal & Iron Co. for the year ended March 31, 1907, shows total revenue of $603,820, compared with $527,065 in 1906 and $341,997 in 1905. Expenses and depreciations aggregated $464,152 in 1907, $423,237 in 1906 and $308,675 in 1905, leaving a net income of $139,668 in 1907, $103,828 in 1906 and $33,322 in 1905. After making further charges the surplus remains $64,969 in 1907, against $30,231 in 1906 and a deficit of $39,500 in 1905.

The Grand Trunk railway has awarded the contract for the extensive new car shops which it will erect at Battle Creek, and work will be commenced at once.

EMPLOYERS' LIABILITY

For Injuries Specified in New Pennsylvania Enactment.

(Special Correspondence.)

Harrisburg, Pa., June 12.—The Casey employers' liability bill, making a new law for recovery of damages by an employee, was signed by Governor Stuart this week, although opposed by the manufacturing, mining and railroad interests of the state.

The bill provides that in all actions brought to recover from an employer for injuries suffered by his employee, the negligence of a fellow-servant of the employer shall not be a defense where the injury was caused or contributed to by any of the following causes: Any defect in the works, plant or machinery of which the employer could have had knowledge by the exercises of ordinary care; the neglect of any person engaged as superintendent, manager, foreman or any other person in charge or control of the works, plant or machinery; the negligence of any persons to whose orders the employee was bound to conform and did conform and by reason of his having conformed thereto the injury or death resulted; the act of any fellow-servant done in obedience to the rules, instructions or orders given by the employer, or any other person who has authority to direct the doing of said act. The manager, superintendent, foreman or other person in charge of or control of the works or any part of the works shall under this act be held as the agent of the employer in all suits for damages for death or injuries suffered by employees.

Buys Allegheny Properties.—The properties of the Allegheny Ore & Iron Co., Clifton Forge, Va., have been purchased by the Lukens Iron & Steel Co., Coatesville, Pa. The iron ore mines at Oriskany and Vesuvius, Va., and the blast furnaces at Buena Vista, Iron Gate and Shenandoah are included in the deal. The Empire Steel & Iron Co. had held the controlling interest in the Allegheny Ore & Iron Co., but this now passes to the Lukens company. As in the past, C. H. Zehnder as president and W. W. Taylor as general manager will direct the management of the Allegheny Ore & Iron Co., C. L. Huston of the Lukens Iron & Steel Co., becomes vice president. Mr. Zehnder's headquarters will be at 140 Cedar street, New York, and the general office of the company will remain at Clifton Forge. The Lukens company had thoroughly tested the mineral property now acquired, and believes itself to be amply supplied with ore for all its immediate and future needs.

LOCOMOTIVES IN BRAZIL.

The imports of American locomotives into Brazil in 1906 were more than three-fold the value of the imports in 1905, and more than sixfold the value of those of 1904, but German manufacturers, who had been all but driven out of the market, have recently secured an order for 17 locomotives in competition with American machines, reports Consul-General George E. Anderson, of Rio de Janeiro. The order just received by the Germans represents the new railway enterprises in the state of Rio Grande do Sul and that portion of Brazil. It is not only important in the size of the order itself, but in that it is the beginning of the enterprise, and the orders placed now are likely to have a very important bearing upon future business. The imports of locomotives and their parts into Brazil during the past three years have been as follows: United States, $124,412 in 1904, $231,420 in 1905 and $783,735 in 1906; Great Britain, $171,847 in 1904, $333,283 in 1905 and $247,152 in 1906; Germany, $25,179 in 1904 and $16,493 in 1905. The imports by others amounted to $18,541 in 1904, $44,953 in 1905 and $69,633 in 1906. The three classes of locomotives used in Brazil are the ordinary railroad locomotives of varying weight and speed, hill-climbing or cog locomotives for mountain work, and small locomotives for use on railways serving the large coffee and sugar estates. In steel rails and railway accessories generally, there has been a general increase in the imports from the United States and Great Britain. There has been a great falling off in the imports from Germany, as the vast bulk of the business still goes to Belgium.

A Correction.—In THE IRON TRADE REVIEW of May 30, the article entitled "Blast Furnace Gas for Power at Gary," stated that no steam engines or boilers were being installed at the new plant of the United States Steel Corporation at Gary, Ind. This was an error, and we are informed by the William Tod Co., Youngstown, O., that it has a contract for, and has now under construction, four horizontal, cross-compound steam blowing engines of large capacity, which will form an important part of the blast furnace equipment. These engines are 44 and 84 x 72 inches, with air cylinders 90 x 72 inches. Each engine has a capacity of 50,000 cubic feet of free air per minute.

FUNDS IN TREASURY

After Entertaining A. F. A. Convention—Meeting of Philadelphia Association.

The great success of the recent annual convention of the American Foundrymen's Association, held in Philadelphia in May, was made the occasion of many felicitations at the monthly meeting of the Philadelphia Foundrymen's Association of that city, which was held at the Manufacturers' Club on June 5. Reports by Dr. E. E. Brown and A. A. Miller, respectively chairman and secretary of the entertainment committee, told what had been done to make the social side of the convention successful and stated that 1,391 persons had registered, of whom 900 to 1,000 attended the smoker, and over 500 the river trip and shad dinner, while 287 went to Atlantic City on the special train. It was announced, as a very gratifying and unusual feature, that a substantial surplus remained of the funds contributed and that this would be returned pro rata to the subscribers. Much sympathy was expressed for ex-President McFadden, of the National Association, who was reported as still confined to his hotel in Philadelphia as a result of his fall, and a basket of flowers was sent to him. Dr. C. B. Thwing, the inventor of Thwing's electrical pyrometer, gave an interesting talk on the theory and workings of that device, and C. H. Cunningham, of the Crucible Steel Casting Co., of Lansdowne, Pa., and Bonvillain & Ronceray, of Philadelphia, representing French makers of molding machines, were elected to membership. A collation followed the meeting, at which brief addresses, dealing chiefly with the convention, were made by Messrs. Brown and Miller, Secretary Howard Evans, Stanley G. Flagg Jr., Cyrus Borgner, and others. No more meetings will be held until September.

In his paper Dr. Thwing said that the almost universal absence of pyrometers from American foundries was not so much due to the failure of foundrymen to appreciate the need of a more accurate measure of the temperature of hot metals as to the failure of instrument makers heretofore to bring out a really practical pyrometer for every day use in the hands of workmen. A pyrometer to be of practical use must be portable, strong, durable, and direct reading in degrees. It must be instantaneous in its indications and accurate to 25 degrees under all ordinary conditions. Pyrometers which require focusing or setting to match a color are useful in the hands of trained chemists, but can not come into every day use in the foundry.

The speaker then explained the

principles of thermo-electric pyrometry, both by direct contact, which finds application in the casting of aluminum, brass and all metals poured below 2,500 degrees, and for measuring the temperatures of annealing furnaces and core ovens; and also by the method of radiation, which is especially suited to the measurement of the temperature of molten steel and iron.

The accuracy of the radiation method has been demonstrated in the laboratory and the proof that the Stfan-Boltzmaon formula

Energy = a constant × $(T \div T')^4$

where T and T' are two temperatures on the absolute scale, is accepted as conclusive for the highest known temperatures.

Prof. Fery of France was the first to offer a commercial instrument using this principle. The Fery pyrometer is costly and requires setting up and focussing for each observation.

Dr. Thwing then described and exhibited his own radiation pyrometer,

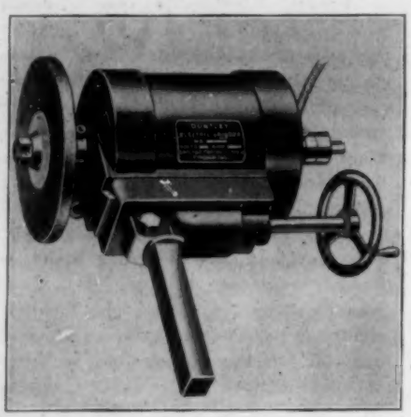


FIG. 1.—TOOL-POST ELECTRIC GRINDER.

which appears to meet to a remarkable degree the very exacting conditions of the foundry.

The galvanometer weighs but three pounds, is portable, and does not require leveling. The receiving tube is held in the hand and requires no focussing or adjusting of any sort. In three seconds after pointing the tube at the hot metal the temperature is indicated accurately in degrees on the scale of the pyrometer. The indications are independent of the distance of the tube from the metal so long as the surface to be measured is not less than an inch in diameter for every foot that the tube is distant from the surface.

San Francisco Progress. — New building operations in San Francisco during the month of May aggregated in value $6,449,847, making the total valuation of permits issued since the fire $69,563,392. Bank clearings for the month were $188,228,387.02, compared with $139,010,645.89 for May, 1905. The month's customs receipts were $815,603.14. Industrial conditions in San Francisco have been temporarily depressed by the recent labor troubles.

SOME NEW ELECTRICAL APPLIANCES.

In the accompanying illustrations we show two electrical appliances recently brought out by the Chicago Pneumatic Tool Co., Chicago. These are a grinder and a portable electric hoist. The grinder, which is shown in Fig. 1, is made in two distinct types, one for portable use, and the other for use in machine tools, the latter being known as a tool-post grinder. The portable grinders are made in two sizes, using 5 and 8-inch wheels, respectively, and consisting of a light motor driving the emery wheel at the speed of the armature. The armature is so proportioned to the diameter of the wheel as to give the proper cutting speed recommended by the manufacturers of the best emery wheels, and the grinder is especially adapted for grinding rough castings or for use wherever heavy duty is required. The tool post grinders are made in three sizes, using wheels of 5, 8, and 10 inches diameter, respectively. The grinding arbor is of steel and runs in self-lubricating bronze bearings. The grinders are provided with tapered steel bushings driven by the shaft and running in phosphor-bronze bearings fastened to the housing of the grinder. Any of these parts can be easily replaced and no part of the housing is used as a bearing. Dust proof collars are provided keeping the emery out of the electrical windings and bearings. The tools are of light weight, but are sufficiently powerful to do their work without excessive heating. When desired, they are furnished especially adapted for internal grinding or mounted on a pedestal, if desired for stationary work.

Fig. 2 shows the Duntley portable electric hoist, which is made in sizes ranging from 250 pounds to 2,000 pounds capacity. In order to secure a light portable hoist, a special motor has been designed for each size, no attempt being made to use the same motor on all sizes. The hoists are of the worm geared type with two hoisting drums, located on each side of the gear. The worm is provided with roller thrust bearings and runs in oil and is driven through a planetary system of gearing. A simple dynamic brake is used, by means of which the hoist can be stopped either when raising or lowering under full load. The control is located at the outside end of the motor, and is operated by two pendant cords. The hoist hooks are provided with a ball bearing swivel. The standard drums are arranged for a lift of 15 feet, and are sufficiently wide so that only one wrap of the cable is necessary on the drum. Where a greater lift is desired, the drums are widened and can be furnished to lift up to 25 feet.

Surplus Is Shown.—Receipts of $60,802, an increase of $13,852; net profits of $57,266, an increase of $15,560, and a surplus of $7,266, against a deficit of $8,735 in 1906 are shown by the annual report of the Shelby Iron Co. for the year ended March

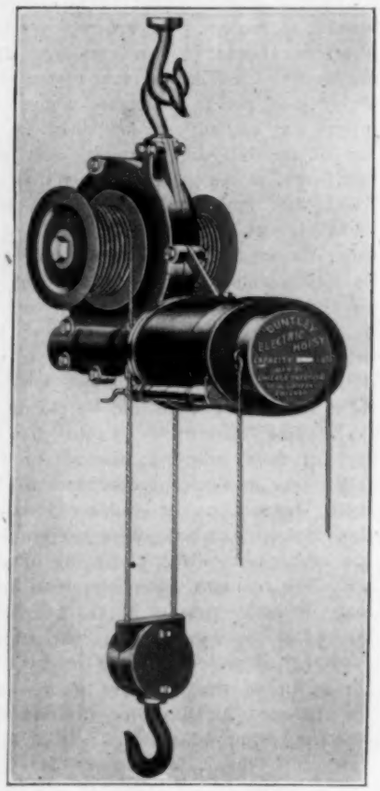


FIG. 2.—DUNTLEY ELECTRIC HOIST.

31, 1907. The present total surplus of the company is $251,404, and the available assets $341,980. In his report President T. G. Bush states that while the market for charcoal iron has not widened, that for southern iron particularly is likely to contract, as the production of southern charcoal iron is on the decrease.

Award Shell Contracts.—The secretary of the navy has awarded contracts for target shells as follows:

Firth-Sterling Steel Co., Washington, 8,000 six-inch, 500 eight-inch and 500 thirteen-inch target shells, at $11.75, $29 and $97.50 each, respectively; Bethlehem Steel Co., 3,000 five-inch, 60-pound common shells, at $9.80 each; United States Rapid Fire Gun & Power Co. for 5,000 three-inch, 50-caliber shells, at $1.74½ each; and E. W. Bliss Co., 2,000 five-inch, 50-caliber target shells, at $8.75 each.

BLACK COUNTRY ENTERPRISE

A LARGE FORGING PRESS AT HALESOWEN, ENGLAND.

The Plant of Walter Somers & Co., Ltd., Which is Adapted to the Production of Heavy Work.

By J. Horton.

The semi-rural village of Halesowen, Staffordshire, is hardly the place where one would expect to find an up-to-date engineering works with a gigantic hydraulic forging press. Situated on the borders of the black country, Halesowen has never shared the characteristics of that famous region of sulphur and smoke. There is an old-time character even about the numerous smithies at the back of the cottages, where women and girls still hammer out nails and chains at miniature hearths and anvils. Close to the village the poet Shenstone once wrote, and within a mile of Halesowen is one of the prettiest rural districts of South Staffordshire. The curling of smoke from a group of tall stacks, and the thud of the hammers are a little incongruous in such surroundings, but the existence of the big forge is unexpected until the visitor, crossing between blossoming hedgerows, the ridge of the hill, finds himself face to face with the big engineering establishment in the valley. In its general characteristics, Haywood Forge suggests a kind of migrant from Sheffield, the center of leviathan hammers and gigantic furnaces. Here in this little out-of-the-way old-world village, Messrs. Walter Somers & Co., Ltd., have established the biggest machinery of the Midlands, while their engineering products may be said to keep them on speaking terms with the greatest of the world's industries and in touch with the ends of the earth.

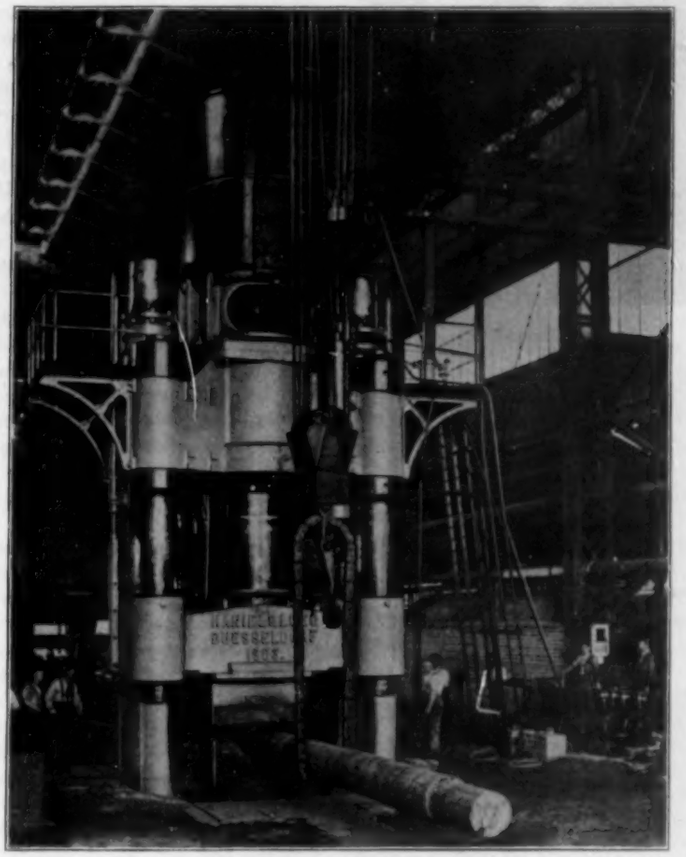


Fig. 1.—3,600-Ton Hydraulic Forging Press.

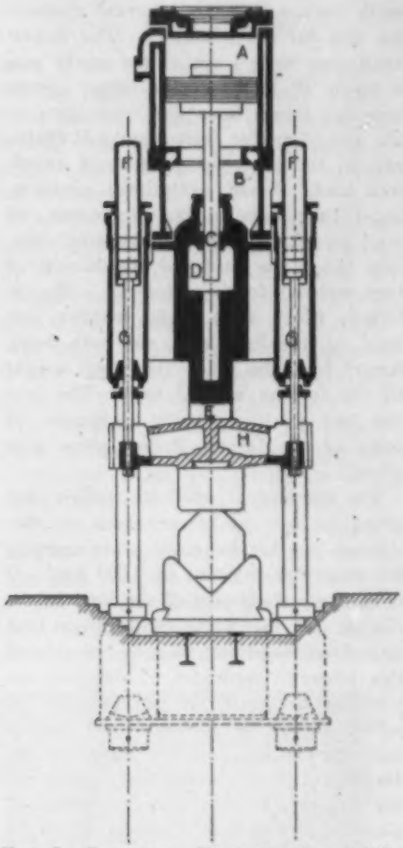


Fig. 2.—Sectional Elevation of 3,600-Ton Forging Press.

The firm was established 40 years ago by Walter Somers, and twelve years ago the business was converted into a private limited company with Mr. Somers as chairman and managing director. His sons now take an active part in the management and Messrs. William and Frank Somers have added the important equipment of technical knowledge to the business enterprise and the practical knowledge of the founder of the firm. Of late years, the works has been greatly enlarged, and now covers an area of about six acres. A very material advantage in view of the big castings dealt with is the proximity of the Great Western railway which is linked to the works by a branch line. The Birmingham canal runs close by, but owing to the mediaeval character of Black country canals, the waterways are of little use, except for the transit of fuel. Some day perhaps Messrs. Somers may see their way to enter upon the production of their raw steel, but at present this has to be imported, largely from the Sheffield district.

Of the works generally, it may be said that they are laid out for the production of the biggest engineering materials. There are twelve steam hammers ranging from 1,000 pounds to 12 tons, with steam and hydraulic cranes to serve them, and machine shops also fitted with cranes and powerful lathes capable of

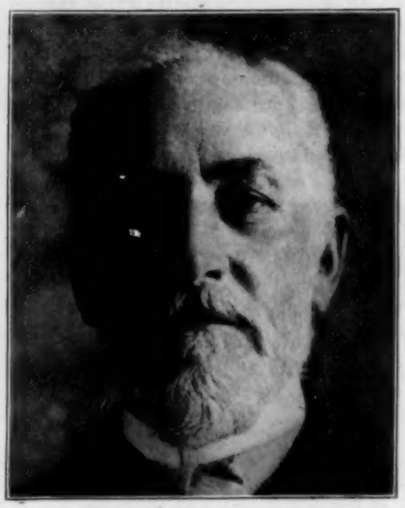
turning and finishing shafts up to 80 feet long, with other machines for planing, boring, shaping and milling. Every device for economizing heat, purifying and softening water, and in other ways promoting a satisfactory final result has been introduced into the works.

The extensive use of gas furnaces, the value of which has not yet been recognized by the district generally has economized production, while enormously reducing the atmospheric impurities usually associated with large works. The firm employs 300 hands, and has lately shown its interest in the work-people by the provision of a large open-air swimming bath.

When the representative of THE IRON TRADE REVIEW called, the firm was at work upon a 32,000-horsepower connecting rod for the admiralty. The largest shaft ever turned out of the works was a screw 76 feet 8 inches long. Some very big things have also been done in the way of rudder frames and tail shafts, one of the latter weighing over seventeen tons. Some exceptional performances have been in the production of steel propeller brackets, and special mention should be made of the hammered iron cathead forgings for H. M. S. Ocean, which were made without any weld, all the lugs, eyes, and ears, being forged from the solid. The total weight of the forging was 15 tons. The firm has had a share in the equipment of some of the largest British ships now afloat.

The mechanical specialty which has given the firm its recent claim to distinction is a big hydraulic press exerting the enormous pressure of 3,600 tons. It is the only equipment of the kind in the district and the South Staffordshire Iron and Steel Institute recently considered this powerful apparatus of sufficient importance to justify a special visit, in which about 100 members and friends took part. The visitors witnessed the forging of a 17-ton ingot by the press, for shipment to Australia. It would be possible to negotiate castings up to 80 tons, but the bulk of them are about 20 tons. The press is served by a 60-ton electric traveling crane. For the heating of the ingot the furnace in use has an inside area of 400 cubic feet. It is possible to reduce a 50-inch ingot down to 26 by 13 inches with a single heat.

Messrs. Somers have frequently forged tail shafts weighing over 17 tons from the ingot at one heat. The process occupies about three hours and at the end the forging is still as a rule at a good temperature. Naturally, the avoidance of re-heating means a great saving of time, and the firm feels a justifiable pride in the remarkably short time it has taken



WALTER SOMERS.

to execute its biggest orders. The fuel economy involved in this rapid production is, of course, very large.

The photographs which accompany this sketch of the works, specially taken for THE IRON TRADE REVIEW, give a very good idea both of the press itself, and of the firm's productions. It will be seen that the press is the manufacture of Messrs. Haniel & Lueg, of Dusseldorf. The proprietors are patriotic enough to regret the necessity of purchasing from a German house, but it is a case of Hobson's choice, as no English firm has yet succeeded in producing a press of this description, of equal quality. The enterprise has proved highly successful, the only difficulty arising being the necessity of extending the engineering department and especially of increasing the lathe power to cope with the large orders that have been received.

The development has been of great service incidentally to other local firms, owing to the rapidity with which Messrs. Somers have risen to the occasion in furnishing new equipments to works whose machinery has broken down.

Some details may be given of the press itself of which the German firm already mentioned is the sole manufacturer. The water is obtained from a tank kept at about 60 pounds per square inch pressure. The lifting of the tool is effected by steam cylinders while for the actual squeeze a steam intensifier is used. All the adjusting movements are done by water pressure of about 750 pounds per square inch. The press comprises a bed-plate of about 65 tons weight bolted to foundations so arranged as to add to the strength of the press and increase the resisting surface. Four strong columns each of 15 tons weight connect this bed-plate to the fixed cross-head which is of 33 tons weight, and in the middle of the cross-head is the pressure cylinder. The large ram is fastened to a movable cross-head, guided by four columns and connected by rods with a couple of rams working from two counterpoise cylinders. The secondary hydraulic power of the press is furnished by engines pumping water into an accumulator weighted to give a pressure of about 735 pounds per square inch.

The following is a technical description of the method of operation furnished by the firm to the South Staffordshire Steel Institute in connection with its visit:

By admitting water into the pressure cylinder D—whose ram E has an area considerably in excess of the combined effective areas of the rams F F—it overcomes the lifting power of the two smaller rams, and causes the crosshead H to descend. The counterpoise cylinders are then communicating with the pressure cylinder, and the water which is displaced by them, is combined with the water from the low pressure main and flows into the pressure cylinder. When the crosshead H is required to be lifted

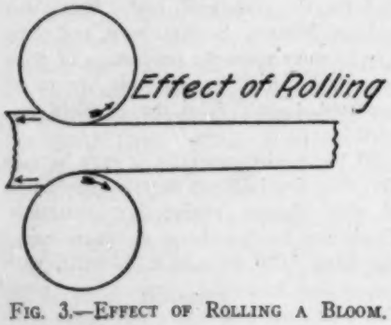


FIG. 3.—EFFECT OF ROLLING A BLOOM.

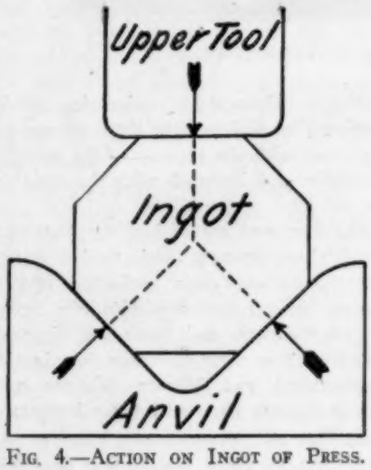


FIG. 4.—ACTION ON INGOT OF PRESS.

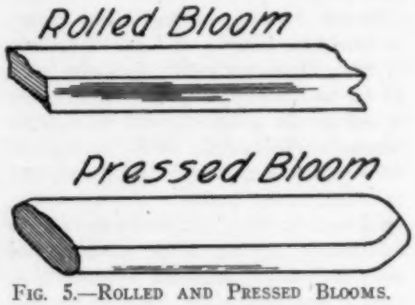


FIG. 5.—ROLLED AND PRESSED BLOOMS.

FIG. 6.—LONG SCREW FOR SHEAR LEGS IN LATHE.

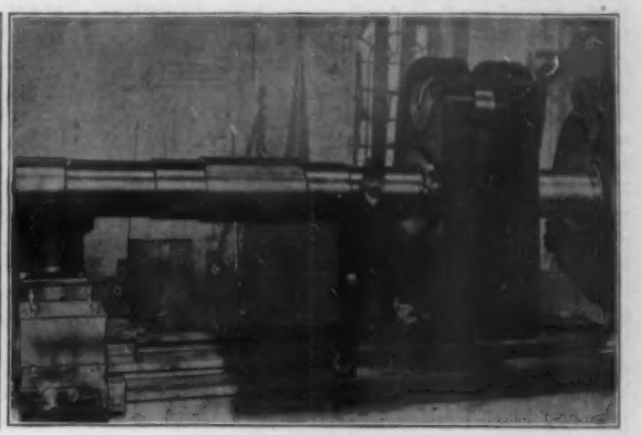


FIG. 7.—BUILT UP CRANK SHAFT FOR MILL ENGINE.

through any considerable distance, a valve is opened which permits the water in the pressure cylinder D to escape, and the combined lifting powers of the counterpoise cylinders drive the water out of it, and the crosshead H continues to rise until the flow of water from the cylinder D is stopped by the closing of the valve. The movements described are only for lifting the ram E, and crosshead H, and for lowering the same into position on the piece to be forged; and for these purposes ordinary low hydraulic pressure is used. When preparing to forge, the crosshead H is lifted up for the ingot to be placed on the anvil, and is then lowered till the upper tool rests on the ingot. All this adjusting is done by means of low hydraulic pressure, but a far greater pressure is necessary to forge the ingot on the anvil. For this purpose the steam intensifier is brought into use, in the following manner:—The pressure of water in the cylinder D under the ram C, which is caused by the lifting power of the counterpoise cylinders forcing the ram E into the cylinder D, is sufficient to keep the steam piston at the upper end of its stroke. On admitting steam into the cylinder A on the top of the piston, the rod C is forced downwards, raising the pressure of the water in the pressure cylinder D, thus causing the ram E and crosshead H to descend through a much less distance than the ram C, but with a proportionately greater power. During this pressing stroke, which is usually from about 6 to 6½ inches, the counterpoise cylinders are closed against the low pressure main by a self-acting retaining valve and they then only communicate with the air vessels which are arranged in the rams F F. When the crosshead H descends under the action of the steam intensifier, the water from the counterpoise cylinders is driven into these air vessels, raising the pressure from 735 to 800 pounds per square inch. On exhausting the steam from the cylinder A, the elasticity of the air in the air vessels lifts the upper tool promptly, so that when finishing or planishing forgings, as many as forty strokes and more a minute can be had.

The firm is very decided in its commendations of the press as being immensely superior to the hammer. It finds that the force exerted penetrates right into the middle of the ingot and bloom. Another disadvantage in the steam hammer is avoided, the tending to spread the outside parts of the metal while not penetrating into the middle. The equalizing of pressure is assisted in the making of round shafts by the use of V anvils. Great care is exercised in the heating of the metal, a slow heat being preferred to give the ingot an opportunity to be well soaked through. The slow process also is essential with large ingots because experience shows that if a very large mass of metal is placed in the furnace at a high temperature, the ingot is liable to crack owing to the outside expanding through quick heating, while the middle is not affected until the metal has been exposed to the heat for several minutes.

A number of improvements have been found necessary to secure effective working. For example, the water used is softened and filtered, the heating all being done by exhaust steam from the different engines, while the steam power has been supplemented with electrical energy for the driving of motors.

The business of the firm has been greatly increased since the adoption of the leviathan press, which may be said to have introduced a new era in the life of the firm and there is every probability of a great increase both of business and of the area occupied in the comparatively near future. Mr. Somers senior frankly admits that in tackling the big press they undertook more than they bargained for

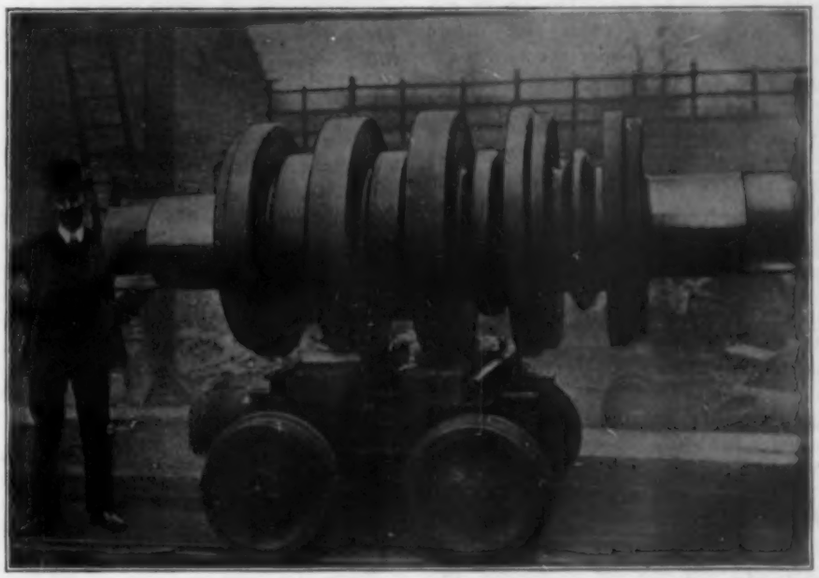


FIG. 8.—FORGED ROLL, 43¼ INCHES DIAMETER.

in the way of resultant developments, but having put their hands to the plough they mean to go on. The firm's enterprise is regarded with some pride in the district where local patriotism is strong, and the success of Haywood Forge is frequently quoted as evidence that South Staffordshire, the birthplace of the iron trade industry, is very far from being played out, having in fact taken a new lease of life.

The writer has to acknowledge the most helpful co-operation of Messrs. William and Frank Somers, the junior members of the firm, the former of whom is president of the South Staffordshire Iron and Steel Institute.

NEW METHOD OF MANUFACTURING IRON.

By Robert Grimshaw.

Dr. G. P. de Laval, of Stockholm, has produced a new process of manufacturing iron. The necessary ore, coal and other materials are finely pulverized, and uninterruptedly and regularly driven into one end of a furnace by means of a stream of air and gas that by means of pressure or vacuum flows tangentially against the wall of the furnace, and thus makes a whirlwind which effects the intimate mixture of the air or gas with the charge, driving this from the central portion of the furnace to the periphery, while the stream of air or gas is driven, together with the gases evolved, spirally from the periphery to the central zone. The furnace, which is cylindrical and vertical, has above a filling hopper; below, there is a tap-hole for the iron, and an escape-hole for the gas. In the furnace there is a delivery pipe and a current of air or gas. The air or gas coming in through this pipe draws with it from the hopper the pulverized material. It is better that carbonic oxide (CO) be introduced, instead of air. The coal is burned in the upper part of the furnace to CO. The slag and reduced iron collect on the wall of the furnace, and flow down to the lower end.

The Nova Scotia Steel & Coal Co. is arranging for a supply of iron ore from Brazil. Negotiations have for some time been pending for the purchase by the company of large iron ore deposits in the interior of that country, which last year were examined by an expert on behalf of the company. The report being highly favorable, it has been determined to close the deal. Harvey Graham, one of the directors, has left for Brazil for that purpose.

EXPENSE: MAN-HOUR DISTRIBUTION.[1]

By F. E. Webner.[2]

While the machine-hour is, without a doubt, the most scientific manner of spreading overhead costs, or "burden," over product, there are so many intricacies entering into the installation of the machine-hour plan as to make it seem unwise for the manufacturer to attempt it without professional assistance, especially where the man-hour distribution comes so near the truth and will make such a good and sure stepping stone to a future development as to seem worthy of adoption.

Briefly, the machine-hour distribution contemplates the charging to each machine a certain amount for rental of space occupied, an amount for power consumed, an amount for repairs, for depreciation, for general costs, etc., much after the same plan or idea that in the last article expense was divided as between departments. Having arrived at the amount of actual maintenance costs a certain number of hours are determined upon as the probable hours of actual use (based on past experience) and finally by dividing the number of such probable working hours into the total costs chargeable against the particular machine there is found a constant which is used in spreading such costs over the product of such machine in the proportion that benefit is received. For instance, if the machine is used for two and a half hours on a particular shop order then two and one-half times the constant is charged to that shop order. This plan partakes of the features of rental for benefits derived.

Some machines require much power, some slight power and some none whatever save hand or foot power. In this connection a vise may be treated as a machine, hence it will be readily understood that the machine-hour rate will vary with the individual machines and there may possibly be as many rates as there are machines, which naturally will create a volume of clerical work and seem like red-tape, but, as has been explained in previous chapters, it is red tape that pays and the knowledge of details that is gleaned from the labor incident to the maintenance of a cost system will ordinarily more than offset the expense of obtaining such costs.

In outlining a general plan under the machine-hour basis there can be no royal road to a successful installation inasmuch as individual cases require specific treatment. In matters of detail sometimes one plan is followed and sometimes another depending largely on physical and other conditions and, while it might be said broadly that a system should be fitted to the business and not the business fitted to the system yet where it seems apparent that the business must be fitted to the system it is a foregone conclusion that some of the cardinal principles of the business have been distorted and abused and need remedying. It very frequently occurs that in attempting to install a cost system seemingly insurmountable obstacles are found to exist in the way of antiquated methods which, when finally overcome by other and more modern methods of production, are found to have paved the way for easy cost finding and incidentally to have materially reduced the cost of production.

Where the man-hour distribution is to be used it should, by all means, be used in each individual department independently of other departments and not the man-hour constant be taken for the factory as a whole, else there would accrue nothing nearer the truth than might be found on a percentage basis, based entirely on ancient history. The writer even urges the subdividing of such departments as have a variety of machinery classes in use, as for instance much power, little power and foot power.

Having found the departmental costs as outlined in a previous article the next step is to determine the man-hour constant; this is done by dividing the total number of productive hours consumed in the department or sub-department for the month into the total expense for such department, or sub-department for the same period. Each shop order can then in each successive department or sub-department be loaded with an amount of overhead expense or burden equal to the number of productive hours used times the departmental constant. The logical way of spreading costs in this manner is to await the closing of the month, or period, before spreading the overhead burden which gives exact results yet conditions vary so that no iron-clad rule can be laid down. If costs are desired quickly after the completion of the product then it is a foregone conclusion that some element of guess work must enter into the calculation, yet in a going institution the man-hour rate should be maintained at a fairly close mean average. As a matter of fact many shops within the writer's knowledge obtain the man-hour constant but four times a year, which gives good satisfaction, especially

[1] Tenth of a series of articles on cost keeping.

[2] Certified public accountant, Cincinnati.

where the line of product is unvarying and where the data are maintained synthetically as well as analytically as outlined in a previous article; the synthetical information being the total number of hours involved in work in process and the money value of such hours, enabling those concerned to maintain statistics to as fine a point as may be desired.

The constant is quite likely to vary somewhat from different causes that are incident to the business as for instance, varying weather conditions in seasons, trade conditions by seasons, etc., so that where such fluctuations are anticipated the constant may still be maintained at a fairly even figure by charging into the costs of a given period a certain amount to be set aside or reserved for absorption during the slack season or season of higher cost. Superficially this may seem wrong in theory, but it is not, and moreover the record of costs may thereby be subsequently worked down to a very fine point. For instance, where during the course of a given season what amounts to $0.025 per hour has been loaded for reserve against another season and at close of such other season it was found that only $0.017 was needed by this man-hour plan the corrections can be worked out on a given shop order without any difficulty whatever, whereas under a percentage plan of spreading the burden it would be absolutely impossible to change.

Where no cognizance is taken of variation by seasons, the record of costs of a given machine as kept by subsequent shop orders under which such machine was made, will likely vary so greatly that the costs under the different and successive shop order numbers will each have to show causes for variation.

Where departments are run at less than full capacity or even, for any reason stopped temporarily there is always a cost involved and such cost has to be absorbed by product in one way or another but preferably through the medium of a reserve account. One way is to charge idle time into a reserve account of fitting caption on the hypothesis that the idle time was caused by some well defined reason worthy of statistical reference and which might subsequently be traced if need be, through the record of costs of product, especially if such slack time or shut down shall have been anticipated and reserved against.

Another, but not a good way, is to consider only the actual hours applied to product during that month or period of slack time without making use of the reserve account which, the reader will see, is bound to cause a very high constant per actual productive hour and which will need many explanations as reference is subsequently made to the cost records.

The modus operandi for spreading the expense on the man-hour basis is simple enough for a junior clerk to operate; by a reference to the cost records the order numbers and the total number of productive hours under each order in process can be listed on an adding machine, one department at a time, making sure that the departmental totals thus obtained articulates with the number of hours appearing on the pay rolls for such departments, having done which the slip can be removed from the machine and the extensions made, in each case, by multiplying the number of hours shown by the departmental constant and afterward adding the extensions to prove that the total thus found exactly equals the total expense of such department for the period under consideration.

THE AJAX GRAPPLE HOOK.

The accompanying illustration shows the Ajax grapple hook devised for holding boiler plates or other metallic sheets while being punched or otherwise worked or transported from place to place. The construction is clearly shown in the illustration. An inner holding hook travels up and down on

The Ajax Grapple Hook.

the flange of an outer holding hook, being actuated by the lever, as shown. On the lever is a cotter pin shackle. The lever is of such length as to provide a handle for quickly engaging or releasing the plate, as well as guiding the sheet being punched or worked. The hook is manufactured by the Ajax Grapple Hook Co., 136 Liberty street, New York.

A SYSTEM OF MANAGEMENT IN A FOUNDRY.

The great benefits which accrue from a proper systematizing of any business are well illustrated by the experience of a steel foundry whose name and location are withheld upon request, as the work is only about half completed, no attempt having as yet been made to handle labor economically. A few years ago this company was steadily losing money, although it was doing plenty of business and the books were full of orders. A survey of the situation by those in charge led to the conclusion that it was the method of getting work through the shop that was responsible for the trouble. This method, or lack of method, was the old-fashioned, happy-go-lucky system of handing the order and pattern to the foreman and telling him to do the job. Sometimes it would be done on time, most times not. Often a casting would be lost after it was made. It was impossible to tell the condition of an order after it went into the shop, until it appeared on the shipping room floor, and then sometimes it was necessary to hunt through a pile of castings to locate any given one.

When the change from the old order of things was decided upon, an expert was called in, who devised a plan of operations, which is, to use his own language, "not a system at all, just plain common sense." The governing idea in the plan adopted may be stated as follows: "First decide what you are going to do, and when you want it done, then go ahead and do it." This sounds simple enough; the records and system necessary for carrying out this idea, however, at first glance, appear complicated, but after a short amount of study they are easily understood, and are just as simple and logical as the governing idea.

The work in the foundry is divided into three general operations, namely, molding, casting, and cleaning. The work in each department being clearly defined and dependent on the other operations for accomplishing the proper results, yet independent in its own operation. In short, the shop represents a chain; each of the operations, the links. When one of the departments falls short of completing its operations as laid out, it causes the chain to be broken, consequently it is necessary for each operation to be fully completed up to where the next department begins.

The first and most important step

is the molding department, and upon this depends the satisfying of the customer with a delivery upon which he can depend. Hence the planning of the work must be carefully worked out, and accurate as well as proper records be made for keeping track of it. This can only be accomplished by a schedule, balanced daily, in a graphical form.

The molding space of the foundry is divided into a certain number of floors for doing certain classes of work, and in which the work must be done as laid out each day from the schedules in the office. This schedule or balance of work sheet shows just how much work is laid out in advance, on each floor.

The planning of each piece of work is carefully gone over upon receipt of the pattern and order, so that when it is assigned on the balance of work sheet schedule, to be done on a certain date, on a certain floor, no doubt remains as to carrying this out the day it should be done. As in molding, the drying of molds is defined and done in a routine manner, having ovens for drying molds in specified times. There are certain ovens for drying work in one night while other ovens are for drying work in two nights. Molds placed in certain ovens must be cast within a specified time. For example: molds placed in ovens which dry in one night must be cast the following day, while those which take two days to dry, are not due to be cast until the fourth day from date placed in oven, although they are ready to be cast on the third day, and are cast on that day if possible. From this we know that each mold, after reaching the dry floor, can only remain there for a specified time, and when the time is up, the casting will be in the chipping shop.

In the chipping department, practically the same rules are established as on the dry floor; namely that castings from certain ovens are due to be shipped in a specified number of days from date cast.

Thus the schedule of time for doing the work is complete from the time it is molded. When once it is molded, it is known that it will be ready for shipment a certain number of days from that date.

The incentive to the foreman for carrying out the details, is in the form of a large bonus paid in addition to his daily wages. But in order to get this bonus, his work must be done complete, and if he fails in one step he loses his whole bonus. In this manner the details are watched by those directly responsible, and relieves the management of a great deal of unnecessary watching of details. All that is necessary to know is that the foremen are making bonuses, and when they fail and continue to do so, then it is time to investigate.

The practical results of the operation of this system of management in the shop, have been:

1—The ability to locate the position of any casting and to determine the condition of any order in the shop without asking the foremen any questions.

2—The ability to make deliveries when promised.

3—Harmonious efforts of all foremen to get good results.

4—The turning of a large annual deficit into a large annual profit.

This has been accomplished simply by the application of good business methods and common sense to the foundry problem. We hope some day to be able to tell what can be done if in addition to the above we make a scientific study of the labor problem, and extend the task and bonus system of management to the workmen.

The union molders employed in the jobbing and machinery foundries of Detroit to the number of 750 went on a strike recently upon the refusal of their employers to grant a reduction in the work day from ten to nine hours. Seven of the small jobbing foundries employing about 250 men have granted the reduction. There are still about 500 men out and 1,500 remain at work in the foundries.

TREVIRANUS RAPID ORE CAR UNLOADER.

Methods and machinery for the more rapid mining of iron ore have been continually developed during the past 20 years. Railroad transportation has been much improved, and locomotives, cars, and docks have been increased in number, strength, and capacity, but up to this time the first primitive methods of getting the ore out of the cars into the docks by means of hand labor have remained. In short, the entire operation of shipping ore is completely dependent upon what is the most troublesome feature in the working of the dock, namely, labor.

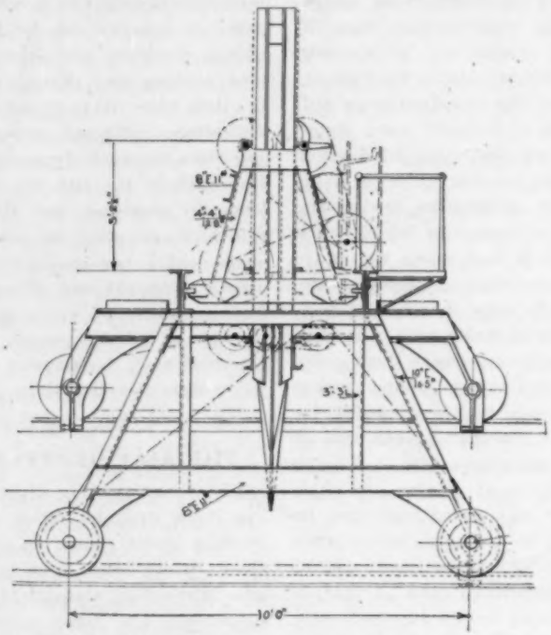


FIG. 1.—END ELEVATION OF ORE CAR UNLOADER.

To supplant this system, the details of which are too well known to need description, Geo. Treviranus, the dock superintendent of the Duluth, Missabe & Northern road, has devised what he styles a "rapid ore car unloader." The apparatus, shown in the accompanying drawings, consists of an overhead traveling bridge similar in idea to the carriage of a gantry crane. This will span the ore pocket from the "gallows frame" to the center of the dock and the runway will extend the length of the dock so that the entire unloading space is accessible. The trucks of the bridge will run on Z-bar rails, laid on the outside of the dock, along the gallows frame and on the inside along a built-up runway so that the only alterations to the present docks necessary for the installation of this machine would be a possible stiffening of the gallows frame and the building of the central runway.

Mounted on this traveling bridge, and operated by means of pinions running on two fixed vertical racks supported by a structural steel framework, are a set of blades which may be raised and lowered, being used as a ram, or by the movement of the bridge along the dock may be used as a sweep. The blades are driven by the connecting mechanism from a motor, and a downward pressure up to eight tons may be exerted by them to break through the ore in the cars as they force it out through the hopper bottoms. The bridge is high enough above the tracks, on which the loaded cars are spotted over the ore pockets, to clear the cars so that when a train of ore is run on the dock the operator of the unloader moves it oven the first car, forces the blades which conform to the cross-section of the car, down through the middle, starting the ore and then, moving the bridge from either end of the car toward the middle, sweeps the remaining ore down through the hoppers. The power available, it is claimed, will enable the blades of the unloader to handle the ore however tightly packed in the cars, and will break up frozen ore in much better shape than is now possible.

With this machine it is estimated that unloading can proceed continuously, rain or shine, at the rate of a car a minute, and instead of the 470 car dumpers employed in two shifts on the docks being required as at present, all that will be necessary will be a single operator for each machine, and the output will be doubled. The unloader is not, as will be seen from the drawings, an expensive piece of apparatus and the cost of installation is small, so that the interest on the investment does not begin to approach the amount which it is claimed would be saved in cost of labor and economy of time through the more continuous and rapid operation. In contrast the work is now frequently interrupted, for a slight rain drives every laborer to shelter, tying up shipping completely, and for work other than during regular hours, the extra time demanded prohibits the operation of the dock for reasons of economy. The installation of the machine unloaders would also make possible a change from the present plan of two 10-hour shifts, whereby four hours are lost every day to three 8-hour shifts.

So far as the efficiency of the new device, and its ability to do the work are concerned, and regarding the necessity for improvement over the methods in vogue, the long experience of the inventor in handling ore should have been a guide sufficient to remove all doubt as to the practicability of the scheme. Labor saving devices are the keynotes of progress and none seem more timely than this one just patented.

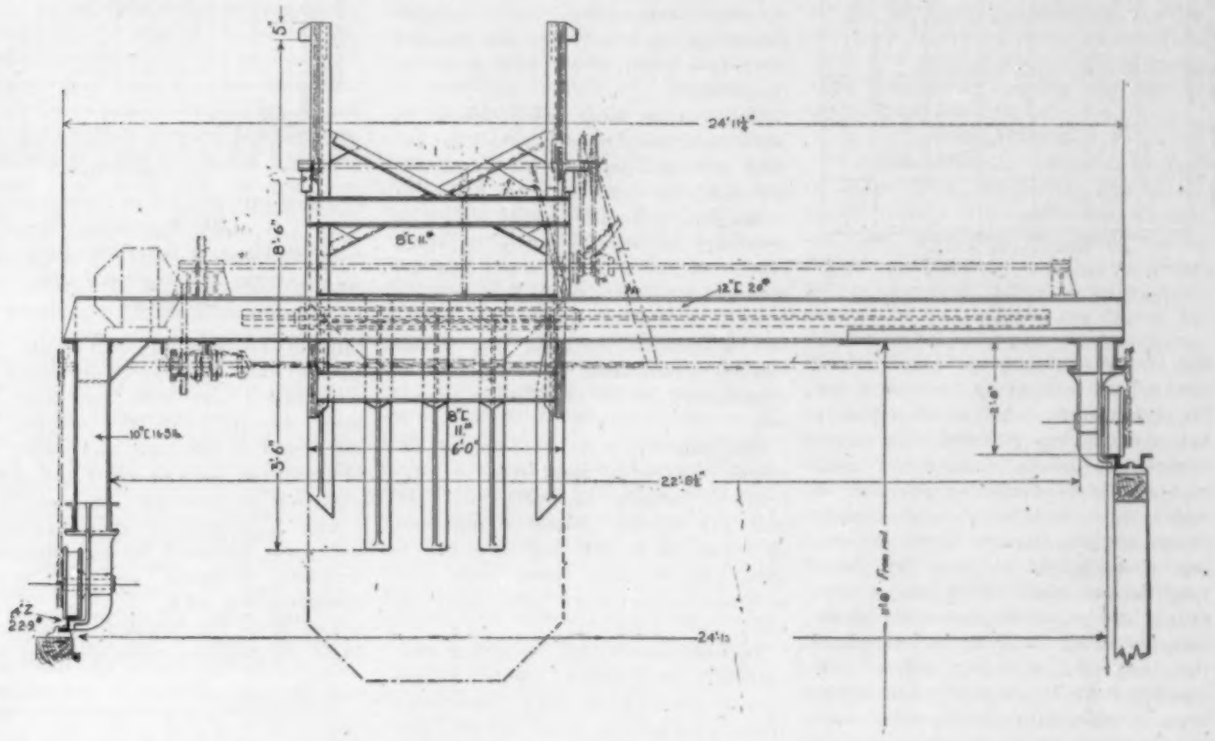


FIG. 2.—SIDE ELEVATION OF ORE CAR UNLOADER.

HOLD UNIQUE BANQUET.

Unique in many respects was the banquet held June 6 at the Bellevue Stratford, Philadelphia, by the Association of Centenary Firms of the United States. The dinner was most elaborate and peculiarly appropriate to the unusual occasion, as it was required that every one of the guests should be a member of some firm that had withstood the commercial storms of at least 100 years, and has existed continuously through panic and prosperity up to the present time. Of these firms, some have been engaged in the commercial world for a century and a half and the business career of one dates back to a score of years over two centuries. The last dinner was held May 4, 1893. The association is composed of firms engaged in various lines of commercial activity. The following, with the dates of their organization, are well known in metal trades: George M. Steinmann & Co., Lancaster, Pa., 1764; Job T. Pugh, Philadelphia, 1774; W. W. Schieffelin & Co., New York, 1781; Pierson & Co., New York, 1787; Nathan Trotter & Co., Philadelphia, 1790; R. D. Wood & Co., Philadelphia, 1803, and George D. Wetherill & Co., Philadelphia, 1807.

THE FLOW OF SUPERHEATED STEAM IN PIPES.[1]

By E. H. Foster.[2]

It is somewhat surprising that with the great number of installations which have been in practical operation there should be so few exact data available as to the flow of superheated steam in pipes. The lack of this information which is so much sought after is doubtless due to

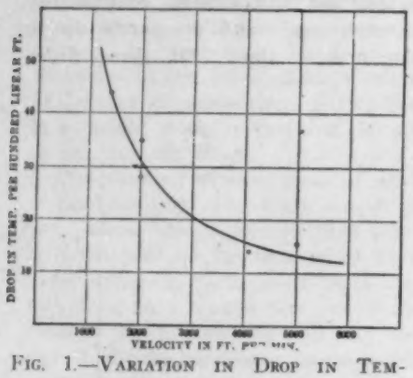


Fig. 1.—Variation in Drop in Temperature in Superheated Steam With Velocity.

the fact that plants are usually constructed on a working basis and not for experiment. As an example, a battery of boilers all fitted with superheaters will deliver steam into a common header or equalizing pipe out of which steam will be taken at various points for the engines which are being served by the boilers. This usual condition of power plant piping permits a free exchange of surplus steam back and forth. Also at various plants the insulating covering differs perceptibly both in character and thickness. Occasionally, however, a situation is found where there is a run of

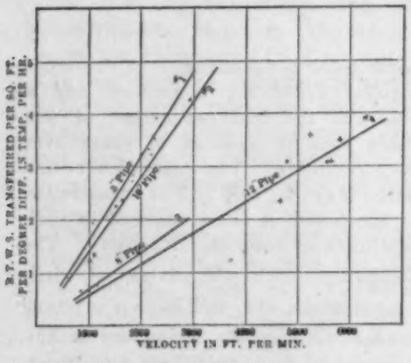


Fig. 2.—Variation in Heat Transfer in Steam Pipes with Velocity.

pipe with a known quantity of steam passing through, from which data may be obtained to throw light on the laws governing the flow of steam. A few general conclusions have been reached as follows:

a That the rate of heat transfer per degree difference in temperature per square foot of surface per hour increases with the steam velocity.

b That this increase is more rapid in small than in large pipes.

c That the percentage loss in heat decreases with the velocity, notwithstanding the rising rate of heat transfer.

A high velocity of superheated steam in pipes is therefore recommended, because there is a smaller percentage of heat losses and because there is a lower actual drop in steam temperature.

The data at hand, while ample to show that the above conclusions are true, have not as yet been arranged sufficiently in detail to allow a formulation of a general law. It would be necessary to have a series of tests, conducted on a large scale, and on different sizes of pipes all covered in a uniform manner, in order to establish a formula covering the actual loss of temperature and pressure by superheated steam at different velocities.

Our practice is to recommend for steam pipes of straight runs or easy bends a velocity of 6,000 to 8,000 feet per minute where a superheat of from 100 to 200 degrees Fahr. is used, and we have found these proportions to give very satisfactory results.

To substantiate the foregoing conclusions, the writer offers a few curves which have been constructed from a mass of notes which have been collected from time to time; also a set of curves taken from a very excellent and complete paper read by O. Berner before the German Society of Engineers in Berlin, published in its transactions of 1904.

This table is also given after being converted into English units. It is expected that these figures will be materially revised from time to time as more complete data on the various subjects are available.

TABLE I.

Loss in Temperature in Degrees F. For 100 Feet of Pipe (O. Berner.)

Av. steam pressure, 176.5 lbs.
Av. steam temperature, 482° F. 105° superheat.

DIAM. PIPE, IN.	VELOCITY OF STEAM IN FEET PER MINUTE.		
	1968	3936	5904
3.937	50.3°	25.5°	16.45°
7.874	25.5°	12.7°	8.23°
11.811	17.0°	8.23°	5.49°
15.748	12.6°	6.07°	4.39°

Fig. 1 shows the rate at which the drop of temperature per hundred lineal feet of run of pipe decreases as velocity of steam increases, and is approximately correct for pipes from 6 to 10 inches in diameter.

Fig. 2 shows that the variation in

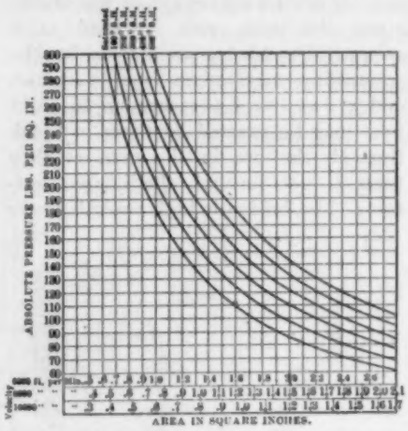


Fig. 3.—Cross-Section of Pipe Required to Pass 1,000 Pounds of Steam Per Hour at Different Pressures, Temperatures and Velocities.

rate of transfer of heat units per square foot of degree difference in temperature per hour increases almost directly with the velocity of the steam in the pipe, and varies for the different sizes of pipes and different kinds of covering. In pipes, Nos. 1 and 2, a good magnesia covering was used; in No. 3, Keasby magnesia, standard thickness, and in No. 4, magnesia, 1⅛ inch.

Fig. 3 is a convenient diagram to show the required cross-sectional area

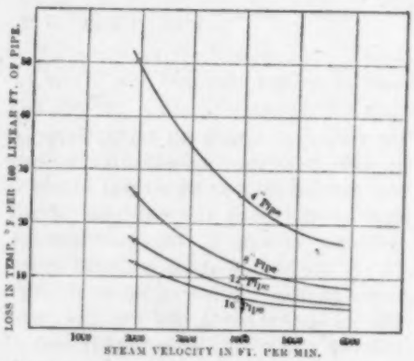


Fig. 4.—Loss of Temperature in Superheated Steam Lines, Varying with Size of Pipe and Velocity of Steam.

of a pipe passing 1,000 pounds of steam per hour at velocities of 6,000, 8,000 and 10,000 feet per minute and at different temperatures and pressures.

Fig. 4 is a curve constructed from figures given by O. Berner.

[1] A paper presented at the Indianapolis meeting (May, 1907) of the American Society of Mechanical Engineers.

[2] Vice President, Power Specialty Co., New York.

GAGING SYSTEMS AND GAGES.

By Joseph V. Woodworth.

In the wonderfully rapid progress made during the past fifteen years in the production of interchangeable machine parts and repetition articles of cast, machined, punched and stamped metals,—through the introduction of snap, plug, limit, micrometer and other gages and instruments for verifying measurements and insuring the production of none but perfectly interchangeable parts, or at least of the parts coming within an allowable limit of variation,—we may trace a line of mechanical development, efficiency in the operation of machinery and tools, and the elimination of hand labor that is simply phenomenal. It may be stated without fear of contradiction, that the perfection of the modern interchangeable system, the cheap and rapid construction of accurate jigs, tools, dies and fixtures for machining and producing repetition parts could never have been attained but for the introduction of the numberless varieties of testing and gaging instruments, which have today been adopted in the most progressive shops where accurate duplicate work is produced.

The object of this article is to call attention to the design, construction, use and application of measuring and testing instruments, which may be adopted to advantage in numberless machine shops and manufacturing establishments throughout the country, to there supersede hand labor in the production of metal parts, and also replacing by modern methods the verification of their interchangeability by methods that are obsolete.

While the use of gages and the installation of gaging systems have progressed wonderfully in the larger manufacturing establishments, and are becoming more generally known and appreciated every day in the smaller ones, there are nevertheless many others wherein the proper design and construction of such tools, together with their value and application are not understood. In such shops where these valuable error detectors are not used, tools, parts of machines and small articles of metal are being laboriously brought down to interchangeability by hand work, and then tested by tedious and uncertain methods; and the same result could be accomplished in one-fourth the time by means of suitable gages of inexpensive construction placed in the hands of workmen who should be taught to use them properly.

Aside from the reduced cost of producing machine parts and articles of metal, which invariably results from the introduction of proper gaging systems, the increased efficiency of the articles so produced is a factor that has to be considered.

Shops in Which Gaging Systems Are Unknown.

The author has inspected a great number of establishments all over the United States, from the small jobbing shop on Center street, New York, to the works of the National Cash Register Co. at Dayton, Ohio, and has come across a large number wherein the proper use of gages and gaging systems was unknown and seemingly unheard of. Therefore it may be stated that if any superintendent of a shop wherein the use of modern gages has been and is still ignored, will make a trip of inspection through the works which he directs, with a treatise on gages in his hands, he will not have proceeded far before becoming possessed of a painful sense of realization that his concern is paying for a lot of unproductive labor. If he is at all progressive, he will then give up some of his time to the study of gaging systems, to a gaining of a proper knowledge of the use of gages, and afterwards to the introduction of a proper system of gaging in his departments. More and better work will result, because the interchangeability and efficiency of the articles will be guaranteed before they leave the hands of the machine operators. There will then be no chance of inaccurate work leaving the shop; there will then be no opportunity for the assembling of inaccurate parts into machines or tools.

From a mechanical point of view, at least, it may be well said that we are living in an age of interchangeability, brought about through the use and perfection of verification instruments for measurement and detection of errors. Never before has the world of industry made use of gages and gaging systems as it is now doing. And there is small wonder for this state of affairs, for these useful tools in all their different phases have proven to the satisfaction of the greatest mechanical economists of today that they are instruments that work for the reducion of cost of production, the perfect efficiency of products, and the education and increasing of the skill of the productive workers.

Of course, to those who are unfamiliar with the gage and its modern application, the statements contained in the foregoing may appear extravagant; but one has only to inspect a modern-equipped and perfectly operated manufacturing plant, wherein accurate machinery is built in large quantities, to become convinced of the surprising rapidity with which the machine tools in use therein turn out accurate work in a steady stream,—with the operators simply occasionally testing a piece with their measuring instruments,—through the use of gages and the proper installation of gaging systems.

Of the many different kinds of gages, the ancient snap and plug gages are the most widely known and used. The reason for this almost universal use of these two types is that all work that requires the use of various other kinds of measuring instruments requires the use of one of these two first.

Gage Making.

In gage making, as in the construction of all verifying instruments, the fundamental quality that works for success, and upon which all subsequent results depend, is accuracy. This the mechanic must always keep in mind from the very moment he cuts off the stock until he has concluded with the finish lapping. If any error does creep in during the construction of a gage, it will, in all probability, mean a great deal of spoiled work if it is allowed to get by unheeded, and all subsequent care in performing the remaining operations toward completing the tool will not avail in eradicating the error. Of course if the error is such that upon investigation it is ascertained that it will not seriously affect the interchangeability or the limit of variation allowable in the parts upon which the gage is to be used for measurement verifying, then the case is different, as the defect will have no effect in preventing the attainment of what the tool is required to indicate.

Steel For Gages.

Of the steel question I will simply state that no grade of steel, however good, is too good for gage work. Therefore, secure the very best grade of steel in the market. As there is no branch of the tool-maker's art in which more attention should be given to the proper selection of steel than in gage making, it is imperative that the best be selected. The expenditure of a few cents per pound over the usual price should not deter one from getting the very best, when it is considered that the cost of material however great is not to be compared with the cost of labor that will be necessary to finish the tool. Besides, a very small defect in the raw material will often not make itself evident until much expensive work has been done; then as the tool is of no use, the loss is great. A steel that can be depended upon in annealing, hardening, tempering

and grinding; a steel that will not shrink or warp excessively; a steel that when hardened will have the minimum of spring in it is the steel to use for gages.

Making a Taper Plug and Ring Gage.

In order to lay before the reader in this and other articles that may follow the methods of gage making, it will be well to take up and explain in detail firstly the making of a small taper plug and ring gage, as in the construction of tools of this type accuracy, skill, patience and workmanship of the highest order are absolutely necessary.

The fact is well known among toolmakers that it is extremely difficult to produce a perfect taper plug and ring gage of special size. Of course in standard sizes of these gages they may be had from manufacturers with their accuracy and efficiency guaranteed, because these people make a specialty of manufacturing lines of such tools, and their workshops are fully and splendidly equipped for turning out such tools in quantities.

In making a special size of taper plug and ring gage it is quite impossible to secure a perfect fit by simply lapping the tool in the ordinary way after hardening. This is so because the diameter is so small that it is usually quite impossible to use a wheel to grind it. Thus the lap is not used in the same manner that the ordinary lap is worked. It is necessary to use the diamond-charged lap to finish it, using it in a manner similar to the use of a wheel for internal grinding, the diamond-charged lap being placed in a traverse grinder or a bench lathe, and with the female gage held in the chuck of the lathe it may be ground easily and accurately, care being taken not to crowd the cutting qualities of the lap. The result of forcing the cutting of a diamond-charged lap of this kind is a finished gage that is "bell-mouthed."

When using the diamond-charged lap for work of the kind above indicated, it will always be found best to keep the lap well lubricated with kerosene oil. Lubricated in this manner the lap will be found to cut much more freely than if used dry. The results will also be much more satisfactory.

The diamond powder used in charging laps for grinding gages may be had in different grades, each grade being known by a number. On fine grinding No. 5 will be the best to use. On ring gage work, however, the grade known as "ungraded" answers all purposes in a most satisfactory manner.

Grinding Out a Small Ring Gage.

When grinding out a very small ring gage, thus necessitating the use of extremely small laps, it is quite difficult to ascertain whether the lap is doing any cutting as the work revolves. In order to not take advantage of this to crowd the lap unknowingly, a little tool known as a transmitter comes in handy. This transmitter can be quickly and easily made of a piece of, say, No. 29 drill rod, one end being split for about half an inch up and its two parts spread so that it will straddle the spindle of the traverse grinder. On the other end of the rod fasten a piece of wood shaped in a neat and comfortable manner so that it will rest against the ear of the workman. This arrangement will act as a telephone and indicate to the operator when the lap is removing just sufficient material inside the gage.

After a taper ring has been made, it will be well to make a perfect lap of the right taper and lap off enough to just remove the marks left by grinding, which are usually very slight.

Grinding and Lapping a Male Plug Gage.

The male or plug taper gage is more easily made and finished than the female. It can be more easily handled and can be readily ground in a universal grinder. It can then be lapped with a piece of babbitt that has been finished off perfectly straight, and the finished surface charged with emery.

In making sets of these gages the plug gage is usually made first. This is done so that as to be able to use it as a reference gage when grinding out the female gage. However when the mechanic is supplied with a model to which to make the tools, the female gage is made first and the plug fitted afterwards to it.

The President's Message.—The Bucyrus Co., South Milwaukee, Wis., has republished in very handsome form President Roosevelt's message on the Panama canal. The message is elaborately illustrated with halftone engravings showing equipment in use on the canal. The Bucyrus Co. furnished the following equipment to the Isthmian Canal Commission and the Panama railroad for use in the canal zone: Thirty-two 95-ton steam shovels, twenty-eight 70-ton and ten new 45-ton shovels. One 100-ton and two 75-ton railway cranes, and one steel pile driver. An admirable map of the zone is included.

The Chicago, Rock Island & Pacific railroad is making final preparations for the erection of extensive shops at Kansas City. The plant will include a large round house, filtration plant, locomotive repair shop and repair shops for both freight and passenger cars.

BOOK REVIEWS.

Self-Propelled Vehicles, by James E. Homans. Sixth edition revised and enlarged. 598 pages. Illustrated. 6 x 8½ inches. Cloth. Supplied by THE IRON TRADE REVIEW for $2.00.

This book is a treatise on the theory, construction, operation, care and management of all forms of automobiles. It comprises a brief history of self-propelled vehicles and then takes up in detail the construction and operation of the various portions of the machine, including the steering and driving mechanism, engine, motor, boilers and auxiliary apparatus. It also contains hints on the care and operation of various types of vehicles.

The Building of a Book. With an introduction by Thomas L. De Vinne, edited by Frederick H. Hitchcock. 8 by 5¾ inches; 375 pages. The Grofton Press, New York. Supplied by THE IRON TRADE REVIEW for $2.20.

In this book it is stated that in 1855 there were only 500 new books issued in the United States, while in 1905 the number had increased to 7,500. This did not include periodicals, catalogs and trade publications whose number is legion; but many of the same problems which confront the book maker in obtaining satisfactory results are also met by the manufacturer who is issuing catalogs and dealing with printers in the preparation of circulars and other reading matter. Hence, the number of people directly or indirectly interested in the subjects treated by the authors of the different chapters of "The Building of a Book" must be very large. Mr. De Vinne, the veteran printer, who writes the introduction, says: "The difficulty of good book making is greater now than ever. Improvements made during the last century in processes of engraving and the making of ink and paper, and the increasing exactions of critical readers and reviewers compel a closer attention to the petty detail of manufacture." This is undoubtedly true and indicates the necessity of all men who have business connections with printers knowing something of the mechanical operations of a printing establishment. The man who knows little or nothing about proof reading, type setting and illustrating soon finds the great disadvantage under which he is laboring if he attempts to have any kind of circular or book work done. He can not fail to obtain much information from a volume which covers so many subjects well as does this one under review. Beginning with the chapter by George W. Cable on "The Author," all important

processes in the making of a book are described and discussed, and there are also several very well written chapters on different methods of selling both new and second hand books. The subjects considered are as follows:

The Author; The Literary Agent; The Literary Adviser; The Manufacturing Department; The Making of Type; Hand Composition and Electrotyping; Composition by the Linotype Machine; Composition by the Monotype Machine; Proof-reading; Paper Making; Presswork; The Printing Press; Printing Ink; The Printer's Roller; The Illustrator; Half-tone, Line and Color Plates; The Wax Process; Making Intaglio Plates; Printing Intaglio Plates; The Gelatine Process; Lithography; Cover Designing; The Cover Stamps; Book Cloths; Book Leathers; The Binding; Special Bindings; Copyrighting; Publicity; Reviewing and Criticising; The Traveling Salesman; Selling at Wholesale; Selling at Retail; Selling by Subscription; Selling at Auction; Selecting for a Public Library; Rare and Second Hand Books.

Steel Mill Buildings, by Milo S. Ketchum. Second edition, enlarged. New York. The Engineering News Publishing Co. 6½ x 9 inches. 464 pages with tables. Cloth. Supplied by THE IRON TRADE REVIEW for $4.00.

The great problem in engineering education is to graduate students equipped practically for the work of their profession. The problem of imparting the theoretical education is difficult enough in itself but it has been attacked with a very fair degree of success. The practical training can never be given entirely satisfactorily in a college course but more can be done than has been done in the past. One difficulty has been found in the nature of the text books obtainable. To a large extent these have omitted the information on commercial details so necessary to the proper equipment of the practicing engineer. Books, however, are being written with the practical end more and more in view.

A notable example may be found in the work under review. Take, for instance, Chapter XXVII on Paints and Painting. Here we have twenty-two articles dealing with the various kinds of paint, methods of application, costs, etc., and ending with a number of references in connection with the subject. Again, Chapter XIX on roof coverings is written in a similar style. All this is eminently practical. Chapter XII, on "Floors" is incomplete in that it does not mention a number of reinforced concrete floors and the combination tile and concrete joist floor, all in successful use. The combination tile and concrete joist roof is also not mentioned in the discussion of Chapter XIX. The theoretical part of the book is well written and it is no criticism on it to say that it discusses much the same ground as do other treatises. There is comparatively little that is new in pure theory nowadays and of this the book appears to present its fair share.

The second edition is enlarged to the extent of over 100 pages of new material. Chapter XV-A on Graphic Methods of Calculating of Deflections has been added, while numerous articles and tables have been inserted in other parts of the book.

The first edition has proved of value as a part of modern practical engineering literature and the new matter will go to increase this value.

A RECENT COAL AND ASH HANDLING PLANT.

The accompanying illustrations show a coal and ash handling plant recently completed and installed by the Russel Wheel & Foundry Co., Detroit, to serve the boiler room of the Toledo Gas, Electric and Heating Co., Toledo, Ohio. This boiler room is equipped with a total of 3,100-horsepower of boiler capacity subdivided into five 400,- three 300- and one 200-horsepower boilers, the four latter being hand-fired, while the five 400-horsepower boilers are equipped with automatic stokers.

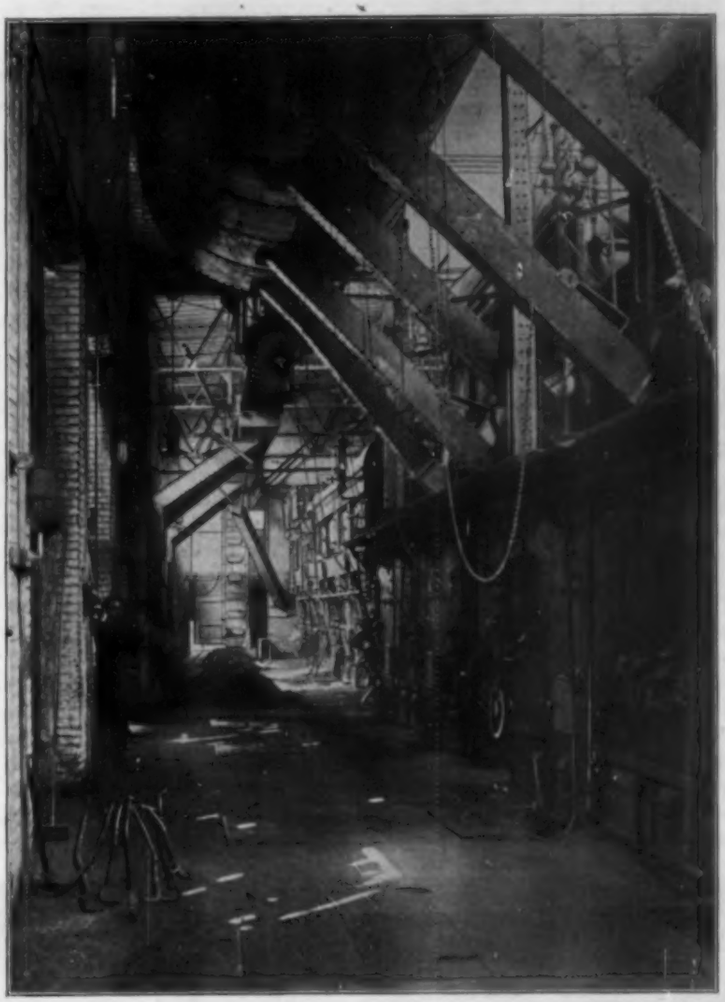


FIG. 1.—INTERIOR OF BOILER ROOM, TOLEDO GAS, ELECTRIC & HEATING CO.

As shown in the cross section, coal is brought to the plant by railroad, the cars discharging from the trestle into a track hopper. Hopper bottom cars dump directly to the hopper, while men shovel coal from the side of gondola cars into the hopper. This hopper has a steel screen on which large lumps of coal are broken before being fed into the conveyer. A 20-inch

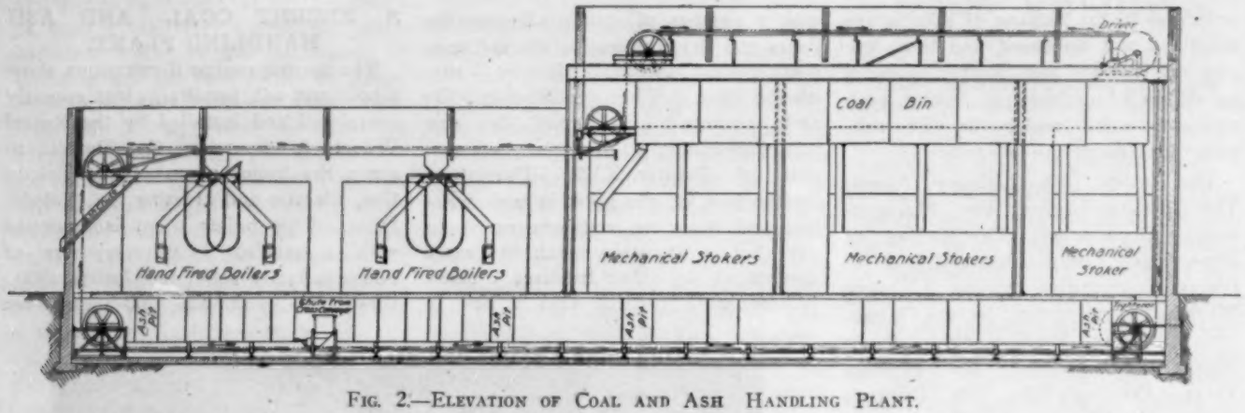


FIG. 2.—ELEVATION OF COAL AND ASH HANDLING PLANT.

belt-conveyer serves to convey the coal from the hopper to the main bucket conveyer. This cross conveyer feeds the main conveyer, which is of the bucket type, and encircles the boiler

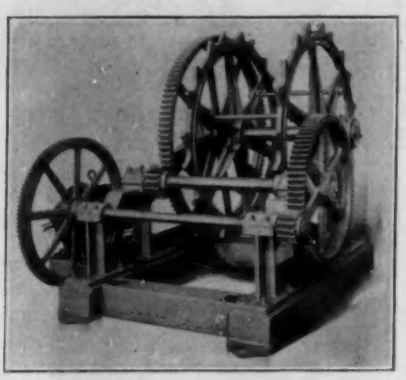


FIG. 3.—HEAD FRAME OF CONVEYOR.

room, handling coal on the upper run, and ashes on the lower. It in turn, discharges the coal either into chutes which dump it on the floor for the hand-fired boilers, or into the coal bins from which it falls by gravity through chutes into the magazines of the mechanical stokers. All chutes, both for the hand-fired and the mechanically-fired boilers are fitted with valves to regulate the flow of coal.

Ashes are disposed of by hoeing them into the bucket conveyer on its lower run. The conveyer discharges them into the ash chute, which deposits them on the ground outside of the building, whence they are carted away. The bucket conveyer is the standard Russel gravity bucket conveyer of a capacity ranging between 40 and 50 tons of coal per hour. The buckets have their pivotal point lower than the axle and the axle is made large entirely covering the space between the buckets. This feature eliminates spill at the load points, while a guide provided at these points prevents the buckets from tipping and makes practically a continuous trough.

The driving mechanism of the bucket conveyer is equipped with a large diameter sprocket wheel to insure a steady motion of the chain. All conveyer wheels are furnished with a large oil reservoir and fitted with spring oiling caps, making practically self-oiling wheels. The conveyer links are so constructed as to insure perfect bearings and alignment, to the conveyer, four links being provided through each section. The dump blocks are made long, so as to hold the buckets in a tipped position an appreciable length of time, making sure that they will entirely empty. On the lower line, a trough plate is used, which acts as a guard, preventing the buckets from tipping and which also prevents ashes from getting into the wheels and links of the conveyer.

The Western Foundry Supply Co., East St. Louis, Ill., manufacturer of ferro-silicon, ferro-manganese, ferro-chrome, etc., will establish a plant in New Jersey near New York City from which to supply more promptly the requirements of its eastern trade. The building acquired will be remodeled and new mill equipment installed. The output will be approximately two carloads daily. The mill is expected to be in operation within sixty days.

FIG. 4.—BUCKETS FILLED WITH COAL ON UPPER RUN OF BUCKET CONVEYOR.

FIG. 5.—ASH CHUTES ON LOWER RUN OF BUCKET CONVEYOR.

HOUSE ORGAN VS. TRADE PAPER.

In a recent address before the Technical Publicity Association, Stewart Benson, advertising manager of R. Wallace & Sons' Mfg. Co., Wallingford, Conn., said:

"It is risky to make a broad statement to the effect that the house organ is a good thing, because of the vast number of such publications, few are worth their salt. No end of money is wasted yearly in this direction, for the reason that it is carried out in the wrong spirit. A manufacturer of a certain class of goods sees the house organ of his competitor, which happens to be a good one. He hears from his salesmen tales of big results to its credit. So he says, 'That is my game,' and forthwith starts to publish one of his own. The preliminary work is minimized, the character and personality of his publication given scant thought. If the same man decided to publish a newspaper or magazine, he would look well into the qualifications of his editorial staff, the question of policy and other details. He doesn't realize that it is harder to edit a house organ properly than any other kind of publication.

"With manufacturers who spend a limited amount of money in advertising, the question comes up whether the trade journals. The reason for this is that it takes less ability and less knowledge of human nature to prepare pulling trade-paper advertisements than to edit a whole publication, no matter how small it is. Moreover, there is the indifference of the trade to combat in putting out the latter. The trade pays money for a subscripion to a good publication dealing with the technicalities of its business. Therefore the trade is interested in this publication, and an advertisement contained therein will bring more or less attention. The house organ goes to a man free of charge, and because of the great mass of printed matter that is now scattered broadcast, it is looked upon askance, unless it is different."

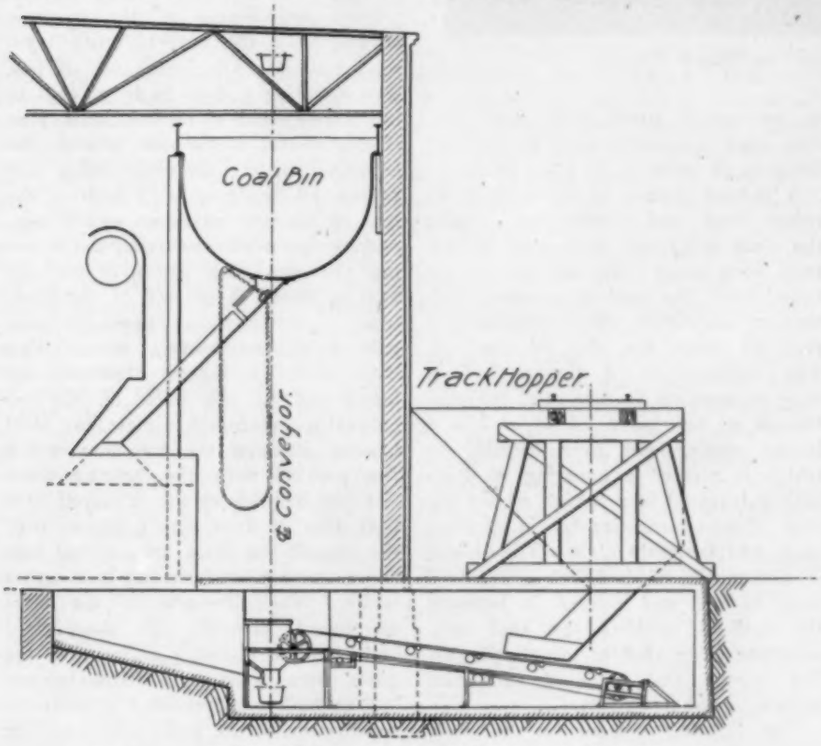


FIG. 6.—CROSS SECTION OF COAL AND ASH HANDLING PLANT.

can be more effectively reached by a publication of the house itself or through the trade press. If a man should ask my opinion and I were unable to look well below the surface before replying, I should decide in favor of the trade

THE HANNA ELECTRIC SAND SHAKER.

The electric shaker shown in the accompanying illustration, designed and built by the Hanna Engineering Works, Chicago, is the first oscillating machine of its kind, equipped with motor drive, that has been offered to the foundry trade.

HANNA ELECTRIC SAND SHAKER.

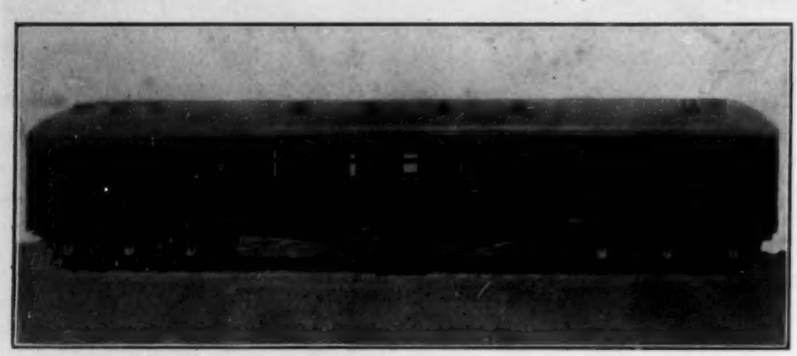
In the construction of the machine an effort was made to keep as closely as possible to the style and size of the small tripod air shaker made by this concern, using the same screen holder and tripod frame. The driving mechanism consists of a cast iron frame mounted on the tripod to which is fastened a motor of ½-horsepower capacity, geared to a crank shaft which is connected by a piston rod to the screen holder. The latter is made a suitable size for an ordinary 18-inch foundry riddle and oscillates approximately 1,000 strokes per minute. All of the operating mechanism as well as the motor is encased making it impossible for any of the sand to get into the working parts. All bearings are bronze bushed and well lubricated. The crank chamber is oil tight and is kept filled with oil. The machine is positive in action and the motor is of sufficient capacity that it is impossible to stall the shaker by overloading with sand when using a two-mesh riddle.

The machines can be arranged for either direct or alternating current to meet local conditions, and weigh 150 pounds.

The new steel plant of Milliken Bros., Inc., on Staten island, again broke all records on May 15, when 419 tons of finished structural shapes were rolled on a single turn in its 28-inch structural mill.

ALL STEEL POSTAL CAR OF THE UNION PACIFIC.

That the steel passenger car is to have a permanent place in the equipment of a modern railroad, on both steam and electric lines, is the opinion of the majority of the railroad officers of today. A number of the larger railroads have already built experimental all-steel cars, and the various car builders throughout the country, have, to a greater or less extent, built experimental cars, and in other ways, have been preparing for the work. Several large orders for all-steel cars for electric and interurban service, have been filled during the past two years, notably, cars for the Brooklyn Rapid Transit, New York subway, and the New York Central railroad, but as yet, no orders for steel passenger cars for trunk line service have been filled by any of the car building companies.



ALL STEEL MAIL CAR FOR THE UNION PACIFIC.

Realizing these demands, the Harriman line officers have decided to put some all-steel equipment on their lines, and with this end in view, designs have been worked up for an all-steel postal car. The first of these cars has recently been turned out of the Union Pacific railroad shops at Omaha. The postal authorities have very favorably commented upon it, and finally approved it for service on the western lines. It is to be followed by thirty-four additional cars, contracts for which are being let.

The car, as to general dimensions, is essentially the same as the old designs of Harriman line wooden postal cars, the inside length being 60 feet, and the width inside, 9 feet. The car is carried on six-wheel trucks, 36½-inch wheels, the truck-frame consisting of one large steel casting, making a truck which is practically indestructible. The car body is formed of I-beams, channels and angles; the center sills are two 12-inch I-beams, side sills of ½ x 3½ x 7 inches angle. The body bolsters are of the double cast steel design, from the Commonwealth Steel Co. The end sills are of cast steel. The underframe, composed of I-beam center sills and heavy side sills, in which the cast steel body bolster is built, is additionally braced by cross bridging, and diagonal braces of 5-inch channels; there are also two needle beams built up of heavy plate and angles. The posts are 2¼ x 4-inch angles, to which the side plate is riveted, the carline being in one piece, riveted to the side plates.

The equipment is essentially the same as in the recent wooden cars, but everything is of metal and fireproof material, the letter-case, distributing tables, paper boxes, etc., all being made of sheet steel and galvanized iron. The floor is made up of corrugated sheet steel, wire netting, and monolith, and the interior finish is in transite, ¼ inch thick.

A special feature in this car, is its round roof and ventilating system, the clear story and deck sash having been done away with, making a plain round roof; the roof is equipped with suction ventilators which exhaust the foul air from the roof of the car. The construction of the roof is a very economical feature, and the carline is in one piece of ¼ x 2 x 4 inches angle, bent over former, on which is riveted a covering of 1-16-inch galvanized iron, which makes the roof almost semi-circular in appearance, and perfectly plain. The ceiling is also made of 1-16-inch galvanized iron, flanged and riveted in between the carlines, making the roof construction very efficient, practically being riveted and soldered into two continuous sheets of steel.

The lighting system is the Axle electric light, of the Adams & Westlake Co., and the lights are distributed down each side of the car over the paper boxes. No gas tanks are carried, and no oil lamps, arrangements being made for candle lighting, in case of possible accident. The heating system is the vapor steam heat.

A NEW FURNACE FOR THE MANUFACTURE OF IRON.

Of late years the aim of engineers, chemists and scientists has been the cheapening of the processes of the manufacture of steel, increased output and tonnage being kept in view at all times by the installation of modern machinery. Comparatively little attention has been devoted to the increased tonnage or production by modern appliances of iron, or to the improving of the quality either by puddling or busheling, or to the reheating and manufacturing of iron into finished products with increased output at decreased cost.

The attention of William Stubblebine and H. E. Smythe, both of the S. R. Smythe Co., Pittsburg, has been directed to this latter problem and they have recently devised a furnace for the treatment of iron products, waste heat from this furnace being used for the generation of steam in boilers for use in the process of manufacture, thus utilizing, to the greatest possible extent, all the available heat in the coal with which the furnace is fired. This furnace is stated to operate at high efficiency and to maintain high temperature with great uniformity.

The construction of the furnace, which is of the reverboratory type, is as follows: The grates are set low, thus enabling a deep body of coal to be carried, and a 12-inch blast pipe is introduced below the grates, the incoming air at that point being preheated. A recuperator is built at the rear of the fire chamber with a second bridge wall, the recuperator being provided with alternate air and heating flues. A portion of the products of combustion passes through ports into the heating flues. Two blast pipes, 8 inches diameter, are introduced at the back of the recuperator underneath a plate, the blast passing through the air flues which run parallel with the heating flues. A cover of brick or tile is placed over both sets of flues, which passes over the top of the main bridge wall into the furnace where the air and gases ignite. The pressure of the blast introduced through the recuperator and into the chamber underneath the grate bars is from 5 to 6 ounces, and as both are preheated, a complete combustion of the gases distilled from the coal is assured, resulting in high temperature and economical operation. The inventors of this furnace state that it accomplishes results almost equal to the regenerative furnace and that it effects a saving in coal ranging from 25 to 35 per cent over methods commonly employed.

The output is stated to be 30 per cent greater when using pig iron and ore, or 40 to 50 per cent greater when using scrap and cast iron turnings with a consumption of 240 pounds of ore to the ton.

Messrs. Stubblebine & Smythe have also devised and, in the near future, will place in operation mechanical puddlers, which will tend to still further decrease the cost of producing iron. The accomplishment of this result will create a tendency toward the substitution of iron for steel, where the latter is now used but where iron would be preferred, were it not for high first cost. Several mills are now under construction, in which the furnace above referred to will be installed.

MACHINE TOOLS IN TURKEY.

England practically monopolizes the blacksmith and machine tool trade in that part of Turkey, reports Consul Ernest L. Harris, of Smyrna. Speaking of the matter in detail, Consul Harris says:

Of late years Germany has started making some headway in these supplies, but the preference is still given to the English products, which are imported usually through local commission merchants. American machine tools, whenever imported, have given the best satisfaction, and there is no doubt that if a proper effort were made to place the various articles before the local consumer they would soon displace all other makes. The machine tools mostly in demand here are lathes, planers and drills, with their full line of accessories. Milling machines, so common in American machine shops, are not used here, probably owing to the lack of specialized work. The lathes are, almost without exception, of the gap type—that is, the bed is broken near the head stock to allow the turning of work exceeding in diameter the normal swing of the lathe. Planers and shapers are of the usual style, with only the slight difference existing between the English and American practice. Drills are also similar to the American types, but of heavier build. Blacksmith drills are of the bench type for hand power, and they differ from the American tool in having the fly wheel mounted on the top and horizontally instead of on the side and vertically. In the line of hand tools there is still a more promising field, which, however, would require careful attention until the various devices are made known and their advantages realized. The best and quickest way to attain this end is to send out competent traveling men with samples. After the first orders have been secured the appointment of a capable agent would in most cases be sufficient for the development of the trade in the various lines. In connection with machine tools I also wish to call attention to the large amount of belting sold here, principally to flour mills.

WATER-WHEEL PLANT OF THE ABNER DOBLE CO.

The Abner Doble Co., San Francisco, is engaged in erecting, on its property in the Potrero district, a modern and extensive warehouse and manufacturing plant. The warehouse and machine shop building, 62 x 220 feet, and a forge shop building, 52 x 202 feet, have been erected, and the material is on the ground for a steel foundry building, 98 x 302 feet, and a cleaning shed, 27 x 127 feet. All of these buildings are of heavy steel mill construction.

The warehouse building will contain complete racks made entirely of structural steel to carry the iron and steel stock, and will be served by two 7½-ton overhead electric traveling cranes. The machine shop is being equipped with a complete line of the most improved up-to-date, heavy machine tools, driven by individual electric motors. The equipment of the forge shop includes a 3-ton forging hammer and two smaller hammers which will be served by two electric traveling cranes. The steel foundry will be equipped with two Wellman 5-ton rolling furnaces, electric charging machine, two 15-ton overhead traveling cranes, walking and gantry cranes, cantilevers, and a complete foundry equipment throughout, including the most improved labor-saving devices, as well as a complete chemical and physical laboratory. The steel foundry will have a capacity of at least 20 tons a day and, for the first year or more, the company will be able to use its own steel scrap of which it has accumulated several thousand tons. The company was established in San Francisco in 1850. Among its principal lines is the importation of iron and steel products of all kinds, especially merchant bar iron and steel, tool steels, cold rolled shafting, and several specialties. The company has a well established manufacturing department; its principal products are the Doble tangential water wheels and other hydraulic machinery, used in many of the large and modern hydro-electric power plants.

GREATNESS OF THE SOUTH.

In an interesting booklet entitled "Facts About the South," Richard H. Edmonds, editor of the *Manufacturers' Record*, paints in glowing colors the future of the iron and steel industry in the southern field. Of its development and possibilities he says: "Halted for a time as the south's metallurgical development was by the discovery of Mesabi ores and the reduction in the cost of transportation from Lake Superior to Pittsburg by reason of the Sault Ste. Marie canal, there has been a complete change and conditions have now come about which insure a rapidity of development of the iron and steel business in the south far greater than could have been anticipated a few years ago. Enlargement of the operations of the two leading companies in Alabama is now being made on a plan which the officials of these companies state will involve an expenditure in the next few years of from $25,000,000 to $30,000,000. Other companies are improving their plants, and, while not on so large a scale, they are in the aggregate spending vast sums in modernizing their equipment and in building new and up-to-date furnaces. Alabama is entering upon a period of development in iron and steel which promises to give that state a growth somewhat rivaling the marvelous expansion in the same industries in Pennsylvania during the last quarter of a century. Considering the momentum of the world's business development, the great difference in wealth and in the consumption of iron and steel, it ought to be possible for Alabama to accomplish as much in the next fifteen years as Pennsylvania has done in the last twenty-five. Even should its industrial growth only equal that of Pennsylvania since 1880, it will bring about a creation of wealth and a volume of business ten times as great as at present."

QUESTION AS TO GAS.

A unique complication has arisen between Buffalo and Welland, Ont., as a result of the rapid industrial development, especially in the iron manufacturing of the Canadian town. Generously scattered throughout Welland county are gas wells which have been for some 15 years supplying the locality with light and fuel. The surplus was piped to the Niagara frontier and beneath the Niagara river to Buffalo, where it supplemented the supply for that city.

Within the past two years Welland has sprung into a lively commercial center and the iron and steel mills and machine and foundry shops have greatly increased consumption. It is therefore considered unwise to further allow the sale of gas across the river, and leading members of the Welland Board of Trade have taken up the matter. Recently the board passed a resolution opposing the disposition of gas outside of Canada and created a committee to ask the next session of Parliament to legislate on the issue and protect the Canadian gas supply.

STEEL RAIL SPECIFICATIONS

And Other Subjects to be Discussed by the American Society for Testing Materials.

The tenth annual meeting of the American Society for Testing Materials will be held at the Hotel Chalfonte, Atlantic City, N. J., June 20-22. The program is as follows:

First session, June 20, 3 p. m. Business meeting, miscellaneous papers and reports. The following papers will be presented: Annual report of the executive committee; "The Raw Material Supply," by P. H. Knight and C. E. Skinner; report of committee J, "Standard Specifications for Coke," C. H. Zehnder, chairman; "Purchase of Coal Under Specifications and Method of Testing," by S. S. Voorhees; "Cast Iron—Some Causes of Failure in Service," by Robert Job; "Notes on Brick Pier Tests," by J. E. Howard; report of committee Q, "Standard Specifications for the Grading of Structural Timber," Herman von Schrenk, chairman; "The Effect of Moisture on the Strength and Stiffness of Wood," by H. D. Tiemann.

Second session, June 20, 8 p. m. Annual address by the president, "The Enforcement of Specifications." The following papers will be presented: "Tests of Concrete Columns," by A. N. Talbot; "Some Additional Notes on Tests of Concrete Columns," by J. E. Howard; "The Testing of Wooden and Reinforced Concrete Telegraph Poles," by R. A. Cummings; "The Corrosion of Iron," by Allerton S. Cushman; "The Influence of Stress upon the Corrosion of Iron," by W. H. Walker and Colby Dill.

Third session, June 21, 10 a. m. Separate meetings will be held at this session by the sections on cement and on preservative coatings. The section on cement will read and discuss the following papers: Report of committee C, "Standard Specifications for Cement," George F. Swain, chairman; "Avoidable Causes of Variation in Cement Testing," by E. B. McCready; "Some Problems of a Cement Inspecting Laboratory," by R. S. Greenman; "The Specific Gravity of Portland Cement," by R. K. Meade; "The Control of Physical Test Results in Portland Cement," by W. A. Aiken; "The Effect of Oil on Concrete," by R. C. Carpenter; "The Structural Materials Testing Laboratories, U. S. Geological Survey: Progress During the Year Ending June 30, 1907," by R. L. Humphrey. The section on preservative coatings and lubricants will read and discuss the following papers: Report of committee E; "Preservative Coatings for Iron and Steel," S. S. Voorhees, chairman; "Priming Coats for Metal Surfaces; Linseed Oil vs. Paint," by F. P. Cheesman; "Deleterious Ingredients in Paints," by L. S. Hughes. Discussion to be opened by G. W. Thompson and F. P. Cheesman; "Physical Properties of Paint Films," by R. S. Perry; "Physical Testing of Varnishes," by J. C. Smith. Discussion to be opened by C. B. Dudley, Robert Job and A. H. Sabin; "Paint Legislation," by E. F. Ladd; report of committee H; "Standard Tests for Lubricants," A. H. Gill, chairman.

Fourth session, June 21, 3 p. m. Report of committee A, "Standard Specifications for Iron and Steel," R. W. Webster, chairman; general discussion on modern American steel rails; this discussion will be opened by representatives of leading railroads, rail manufacturers, locomotive builders, car-wheel manufacturers and inspecting engineers; "Segregation in Steel Ingots," by H. M. Howe; "Effect of Conditions of Rolling on Certain Properties of Steel, by H. M. Howe and William Campbell; "The Heat Treatment of Steel," by William Campbell; "Mechanical Experiences with Limber and Stiff Rail Sections," by P. H. Dudley.

Fifth session, June 22, 10 a. m. Separate meetings will be held at this session by the sections of iron and steel and on concrete, fireproofing and waterproofing materials. The section on iron and steel will read and discuss the following papers: Report of committee M, "Standard Specifications for Staybolt Iron," H. V. Wille, chairman; "Results of Tests of Staybolt Iron," by E. L. Hancock; report of committee T, "The Tempering and Testing of Steel Springs and Standard Specifications for Spring Steel," by J. A. Kinkead, chairman; report of committee O, "Uniform Speed in Commercial Testing," Paul Kreuzpointner, chairman; "The History and Development of Alloy Practice in the United States as Applied to Railway Bearings," by G. H. Clamer; "Compressive and Transverse Tests of Steel Connecting Rods for Locomotives," by Gaetano Lanza; "Tension Tests of Steel Angles," by F. P. McKibben. The section on concrete, fireproofing and waterproofing materials will read and discuss the following papers: Report of committee I, "Reinforced Concrete," F. E. Turneaure, chairman; report of committee P, "Fireproofing Materials," Ira H. Woolson, chairman; "Investigation of the Thermal Conductivity of Different Concrete Mixtures, and the Effect of Heat upon their Strength and Elastic Properties," by Ira H. Woolson; "Effect of Time Element in Loading Reinforced Concrete Beams," by W. K. Hatt; "Tests of Twisted Steel Square Rods for Concrete Reinforcement," by J. J. Shuman; "Tests of Bond Between Steel and Concrete," by T. L. Condron; report of committee S, "Waterproofing Materials," W. A. Aiken, chairman.

Sixth session, June 22, 3 p. m. Report of committee K, "standard Methods of Testing," Gaetano Lanza, chairman; "The National Bureau of Standards," by S. W. Stratton; "The White-Souther Endurance Machine," by H. Souther; "Notes on the Endurance of Steels Under Repeated Alternate Stresses," by J. E. Howard; "Effect of Combined Stresses on the Elastic Properties of Steel," by E. L. Hancock; "A New Impact Machine," by L. W. Page; "The Development of the Penetrometer as Used in the Determination of the Consistency of Semi-Solid Bitumens," by Clifford Richardson and C. N. Forrest; "Multiplying Dividers for Locating Yield Point," by J. A. Capp; "An Instrument for Measuring Deformation in Tests of Materials," by H. F. Moore.

LARGE SAWMILL EQUIPMENT.

Milwaukee, Wis., June 8.—The Filer & Stowell Mfg. Co., of Milwaukee, has begun shipping to Bogolusa, La., one of the largest sawmill equipments in the world. It is said that the plant will be the first steel and concrete mill of the kind, and that it will be the first in which entire trees, as taken from the woods, may be sawed into lumber. The plant will represent an investment of over $1,000,000 and will have a daily capacity of 600,000 feet. The mill, with extensive holdings of timber lands, is the property of the Great Southern Lumber Co., which is controlled by the Goodyears, of Pittsburg, and Charles I. Jones, of Baltimore. There will be in the plant four 8-foot band mills, two 8-foot band saws and one 52-inch gang; one 2,000-horsepower Corliss engine for the mill; one 750-horsepower engine for the planing mill; one 750-horsepower engine for the railroad shops; one 300-horsepower engine for the electric light plant to illuminate the town, and one engine for the mill to cut tree trunks into logs of serviceable size. The Chain Belt Co., of Milwaukee, will supply three carloads of chain belting, this being the largest single order filled in its history.

Professional Trading Raises Quotations.

Although wholly professional in its nature, stock trading has taken on an improved tone, and a general recovery in prices was displayed during the past week. Similar to conditions for many weeks past in its sluggish movement and narrow operations, the market of the week showed a distinguishing factor in its seeming indifference to news of an unfavorable character. On Monday, for the fifth time this year, the average price of 20 active stocks closed below par or 99.50, which was but 1.23 above the panic level touched in March. From this point the market subsequently rallied, the average reaching 102.06 on Friday and 102.96 on Saturday. Much of the buying movement appeared to be that of the shorts and from operators, who, reversing in their position for the time being, bought and bid stocks up at the expense of the bear element. The agricultural situation is commanding the closest scrutiny of operators. Cotton conditions were brought to the front in the week by the first report of the government experts. This showed an exceedingly poor situation, the June condition being 70.5, against 84.6 last year, 77.2 in 1905, 83 in 1904, 71.1 in 1903, and a 10-year average for the period of 83.6. Iron and steel stocks received their share of speculative attention in the week, and substantial gains were made by many of these securities. Transactions included United States Steel 240,700 shares of common and 35,200 shares of preferred; American Car & Foundry, 31,800 shares of common, and American Locomotive, 10,900 shares of common. The New York bank statement was unfavorable, showing a loss of $9,053,100 in cash, a decrease of $6,801,925 in surplus reserve, and an increase of $1,514,300 in loans. The surplus reserve now stands at $5,980,825, as compared with $12,782,450 last week, $7,162,050 the corresponding week in 1906, and $9,827,500 in 1905. On the New York exchange 3,207,540 shares were dealt in during the week, compared with 3,012,900 shares in five business days last week, and 3,987,400 shares the corresponding week last year. For the calendar year to date, total transactions in stocks amount to 110,277,012 shares, compared with 133,026,900 shares in the same period in 1906, and 129,115,636 shares in 1905. Bonds are in about the same dull state, the sales of the week aggregating in value $5,575,000, compared with $5,516,000 last week, and $17,140,000 last year.

Copper Stocks.

Boston.—Butte Coalition highest of week 24½, lowest 24¼, closed 24½; Calumet & Arizona, high 156½, low 155, closed 156; Calumet & Hecla Mining, high 790, low 788, closed 790; North Butte Mining, high 81, low 80½, closed 81; Osceola Mining, high 125, low 125, closed 125; Quincy Mining, high 114, low 113, closed 114.

New York.—Amalgamated Copper, high 87, low 81⅞, closed 86¾.

Financial Notes.

The net earnings of the Alabama Consolidated Coal & Iron Co. for the first quarter of the current year are reported as $193,865.

The United States Cast Iron Pipe & Foundry Co. has applied to the New York stock exchange to transfer its $12,106,300 preferred stock and $12,106,300 common stock from the unlisted to the listed department.

Recent dividend declarations include the American Car & Foundry Co. quarterly dividend of 1 per cent on its common stock, restoring that issue to a 4 per cent basis, and the regular quarterly dividend of 1¾ per cent on its preferred stock, payable July 1; Alabama Consolidated Coal & Iron Co. regular quarterly dividend of 1¾ per cent on its preferred stock, payable June 15; American Can Co. regular quarterly dividend of 1¼ per cent, payable July 1; Ingersoll Rand & Co. regular semi-annual dividend of 3 per cent on the preferred stock, payable July 1.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. June 8	Changes In Week	Date 1907 Ann. Meet.	Stock Outstanding	Dividend Basis	Dividend Last Paid	Dividend Date Last Div. Pay.
Allis-Chalmers	10⅞	+1⅜	Sept.	19,820,000	-	.....	.....
Allis-Chalmers pr	30	+2⅜		16,150,000	7 cum	.....	Feb., 1904
American Can	54	− ¼	Feb.	41,233,800		.....	
Am. Can pr	54	+1		41,233,300	7 cum	5 Q.	Apr., 1907
Am. Car and Fdy	42⅜	+3¼	June 27	30,000,000		2 Q.	Apr., 1907
Am. Car and Fdy pr	97¼	− ¾		30,000,000	7 n. c.	7 Q.	Apr 1907
American Loc.	59⅛	+2⅜	Oct. 5	25,000,000		1¾ Q.	May, 1907
American Loc. pr.	103	−2¼		24,100,000	7 cum	1¾ Q.	Apr. 1907
American Ship.	42⅜	+ ⅜	Oct. 2	7,600,000	6	1 Q.	Mar. 1907
American Ship. pr.	104⅞	− ⅛		7,900,000	7 n. c.	1¾ Q.	Jan. 1907
Am. Steel Foundries	6⅛	.....	Oct. 1	15,810,000		.....	.....
Am. Steel Foundries pr.	35¼	+ ¼		17,240,000	6 cum	.....	Aug., 1904
Barney & Smith	65	.....	June 4	2,000,000	4	4	Mar., 1907
Barney & Smith pr.	128⅛	.....		2,500,000	8 cum	8 Q.	Mar., 1907
Bethlehem Steel	11	+1	April 2	14 862,000		.....	.....
Bethlehem Steel pr.	40	.....		14,808,000	7 n. c.	1¾ Q.	May, 1907
Cambria Steel	38¼	+1⅜	Mar. 19	45,000,000*	6	3 Q.	Feb., 1907
Cambria Iron	47	.....		8,468,000*	4	4 S. A.	Apr., 1907
Chicago Pneumatic Tool	.....	.....	Feb 18	6,145,800	4	4 Q.	Apr., 1907
Colorado Fuel	39⅛	+1¾	Oct. 21	30,132,000		.....	Apr., 1907
Crucible Steel	8	.....	Oct. 16	34,578,400		.....	Apr., 1903
Crucible Steel pr.	68½	− ⅜		24,436,500	7 cum	6	.....
Empire Steel	10	.....	Feb. 27	2,281,400			Mar., 1907
Empire Steel pr	53	+3		2,500,000	6 cum	3 S. A.	.....
Fay & Egan	100	.....	Feb. 19	1,000,000	6	1½ Q.	July, 1906
Fay & Egan pr	128⅛	.....		1,000,000	7 cum	1¾ Q.	May, 1907
General Electric	140	+1	May 14	63,643,600	8	8 Q.	May, 1907
Harbison-Walker	10½	+ ⅛	Jan. 21	18,000,000	6	.....	Apr., 1907
Harbison-Walker pr.	72	.....		9,000,000	6 cum	6 Q.	.....
International Pump	22⅜	− ⅛	June 4	17,762,500		2	Jan., 1907
International Pump pr.	74⅜	.....		11,850,000	6 cum	6 Q.	Apr., 1906
Lackawanna Steel	55	.....	Mar. 13	34,971,400		.....	May, 1907
Lake Sup. Corp	8¼	− ⅛	Oct. 2	40,000,000		.....	.....
New York Air Brake	104⅜	− ⅜	June 18	10,000,000	8	8 Q.	.....
Niles-Bement-Pond	130	.....	Feb. 6	5,000,000	6	6 Q.	Apr., 1907
Niles-Bement-Pond pr.	105	.....		2,000,000	6 cum	3 Q.	Mar, 1907
Otis Elevator Co.	35	.....	March 18	6,350,300		3 A.	May, 1907
Otis Elevator Co. pr.	87	.....		6,808,500	6 n. c.	6 Q.	Apr., 1907
Penn. Steel	60	.....	May 13	10,750,000		.....	Apr., 1907
Penn. Steel pr	100	.....		16,500,000	7 n. c.	3½S. A	.....
Pittsburg Coal Co.	11⅜	.....	Feb. 11	32,000,000		.....	May, 1907
Pittsburg Coal pr.	52⅜	.....		32,000,000	7	.....	Nov., 1906
Pressed Stl. Car	34	+3	Feb. 20	12,500,000		3	Apr., 1905
Pressed Stl. Car pr.	89	.....		12,500,000	7 n. c.	1¾ Q.	Aug., 1904
Pullman	162	+1¼	Oct. 17	100,000,000	8	2 Q.	May, 1907
Railway Stl. Spring	41	+2	Mar 7	13,500,000		4 S. A.	May, 1907
Railway Stl. Spring pr.	90⅞	− ⅛		13,500,000	7 cum	7 Q.	Mar., 1907
Rep. Iron & Steel	25⅝	+1⅛	Oct. 9	27,191,000		.....	Mar. 1907
Rep. Iron & Steel pr.	86⅛	+1⅝		20,416,900	7 cum	7 Q.	.....
Sloss-Sheffield	50⅜	+1⅝	Mar. 5	10,000,000	5	5 Q	Apr., 1907
Sloss-Sheffield pr.	95	.....		6,700,000	7 n. c.	7 Q.	Oct., 1906
Tenn. Coal & Iron	139	.....	May 7	22,553,060	4	4 Q.	Apr., 1907
U. S. Pipe & Fdy.	34⅝	+3⅛	June 26	12,500,000	4	4 Q.	May, 1907
U. S. Pipe & Fdy. pr.	81	.....		12,500,000	7 n. c.	7 Q.	Dec., 1906
U. S. Steel	34⅜	+2	April 15	508,302,500	2 n. c.	½ Q.	Dec., 1906
U. S. Steel pr	98⅛	+1⅛		360,281,100	7 cum	7 Q.	Mar., 1907
U. S. Steel 5's	95½	+ ⅛		463,798,000	5	5 A.	Feb., 1907
Va. Iron, Coal & Coke	60⅛	−3⅞	Sept. 17	8,641,600		.....	.....
Westinghouse Elec	143	.....	July 24	24,998,700*	10	10 Q.	Apr. 1907
West'ghouse Air Brake	143	+1	Oct. 1	11,000,000*		22½ Q.	Jan. 1907

Par value of shares, $100, except those starred, $50.

NEWS FROM MANY INDUSTRIES.

New Buyers:—

The Monarch Stove & Mfg. Co., Princeton, Mo., capital $100,000, has been incorporated by T. W. Ballew, F. D. Harrison and B. C. Hyde.

S. K. Gregg, C. E. Colerick and W. M. Gregg have organized the Standard Safety Boiler Co., Fort Wayne, Ind., with a capitalization of $50,000.

The Britton Machine Works, Ltd., New Orleans, La., has been chartered by Samuel H. Britton, Sam W. Pulliam, Thomas S. Winston and Wilfred E. H. Schmidt.

The Weierbach Brake Shoe & Mfg. Co., Camden, N. J., has been formed by William Weierbach, M. R. A. Zahmiser and B. F. Keen with a capital of $250,000.

With an authorized capital of $5,000 the Automatic Valve Co., Cumberland, Md., has been incorporated by G. Walter Bowman, George E. Gray and Charles H. Sanders.

The Mutual Machine Co., Hartford, Conn., has been formed by Herbert C. Warren, Edward R. Faxon and Alonzo W. Warren. The capital stock of the new company is $12,000.

The Atlantic Iron & Steel Co., Brooklyn, has been incorporated with a capital of $10,000 by George Ganbatz, Charles Ganbatz and O. C. Wells, all of the address given above.

The Portsmouth Machine Co., Portsmouth, O., has been chartered with an authorized capital of $50,000 by Leslie C. Turley, F. W. Knowles, Oscar W. Newman, John E. Rapp and W. J. Meyer.

The American Foundry & Castings Co., Columbus, O., has been organized with a capitalization of $10,000 by William J. Rosencrans, John T. Dietz, James J. Kilcoyne, Oscar F. Davison and Ellis J. Finke.

The Andrews-Marsh Mfg. Co., New York, capital $50,000, has been chartered by George C. Andrews and Hamilton H. Marsh, 286 Greenwich street, and Theodore F. Sanders, 60 Wall street, all of New York, to manufacture printers' and binders' machinery.

The William Howell Brass Works Co., Camden, N. J., capital $50,000, has been organized to manufacture metal products, etc., by John S. Turner, Camden, N. J.; C. Harry Latham and Frank R. Howell, Philadelphia, Pa.

C. H. Duehring & Co., Jersey City, N. J., have been organized with a capitalization of $10,000 to manufacture machinery, etc., by Carl H. Duehring, P. DeWitt Jones and Alfred A. Eyre, all of the above address.

The Helmuth & Edwards Co., New York, has been organized with a capitalization of $50,000 by Louis Helmuth, 22 State street, New York; Frederick Edwards, 4506 Fourth avenue, Brooklyn, and John Helmuth, 1807 Anthony avenue, New York.

Articles of incorporation have been filed by the Eureka Trunk Lock Mfg. Co., New York, to manufacture locks and metal goods, with a capital of $40,000. Those interested are: John T. Norton, George C. Lecomte and Millard H. Jencks, Troy, N. Y.

Articles of incorporation have been filed by the Putnam Motor Mfg. Co., Springfield, Mass. The capital stock of the company is $10,000, and the incorporators are: Robert H. Putnam, Harry T. Putnam and Elbridge J. Eickey, all of Springfield.

The Isotta Import Co., New York, capital $20,000, has been incorporated to manufacture machinery, etc. Those interested are: Roy A. Rainey, Lakewood, N. J.; Clarence M. Hamilton, Mamaroneck, N. Y., and Cipriano Andrade Jr., 527 Fifth avenue, New York.

The Reeves & Skinner Machinery Co., New York, has been formed to manufacture machinery, etc., with a capital of $50,000 by William H. Reeves, St. Louis, Mo.; Bowen W. Pierson, 200 West Fifty-seventh street, and William S. Doran, 32 West Fortieth street, both of New York.

The American Laundry Machinery Mfg. Co., Jersey City, N. J., has been chartered to manufacture laundry machinery, etc. The capital stock of the company is $125,000, and the incorporators are: Charles N. King, Jersey City, N. J.; Oscar R. Houston and William D. Hart, 44 Wall street, New York.

Articles of incorporation have been filed by the American Concrete Steel Co., Detroit, Mich. The concern is capitalized at $100,000, and those interested are: Edward H. Jewett, Harry M. Jewett, David Maxwell, Alexander H. Sibley, Walter Brooks, Charles C. Bothfeld, John H. Wendell and Lewis H. Case.

With an authorized capital of $100,000 the De Lany Separator Co., New York, has been chartered to manufacture separators, engines, machinery, etc. The incorporators are: Byron W. Holt, 35 Nassau street; Richard F. George, 45 Washington square, both of New York, and Robert Baker, 544 Carlton avenue, Brooklyn.

New Construction:—

A. Carpenter & Sons' Foundry Co., 272 Exchange street, Providence, R. I., is erecting a one-story brick foundry addition 80 x 110 feet.

The American Valve Co., Coxsackie, N. Y., has awarded the contract for the erection of a new addition 40 x 168 feet, with an ell 36 x 49 feet.

The Vilter Mfg. Co., Milwaukee, has been granted a municipal permit for the erection of a pipe shed and machine shop in that city to cost $30,000.

The Steel Fixture Mfg. Co., Topeka, Kas., has begun the erection of a new machine shop 75 x 100 feet, one story, of wood and iron construction. The company manufactures steel lockers and similar goods.

The Buckeye Pump & Mfg. Co., Columbus, O., has purchased a new site in that city and is preparing to erect a modern plant, consisting of machine shops, foundry, office rooms, etc.

Work has been started on the new plant of the National Iron Co., Spokane, Wash., which is expected to increase the company's capacity four times. Some new equipment will be required. J. H. Boyd is manager of the company.

A. Adamson, Akron, O., has purchased a tract of five acres of land in that city, and has announced his intention to erect two structures 100 x 200 feet to be used as a machine shop and foundry in addition to his present plant for the manufacture of rubber-making machinery.

The Seneca Chain Co., Mansfield, O., has awarded the contract for the construction of the main building and two forge shops of its new plant in that city. The main building will be 64 x 162 feet and the two forge shops 42 x 232 feet. Other buildings will be added later. The plant will be of very substantial construction.

The foundry of Horace Langdon at Beatrice, Neb., has been purchased by a newly organized company whose corporate name is the Beatrice Iron Works. It is proposed to enlarge the present plant for the manufacture of machinery. The officers of the new concern include A. J. Trude, president, and August A. Schaefer, secretary and treasurer.

Rumsey & Co., Seneca Falls, N. Y.,

manufacturers of pumps, engines, etc., will be in the market for a new traveling crane after the addition to their foundry, 90 x 96 feet, is completed. The plant is run by water power, and the company is fully equipped with everything necessary for a foundry of the size contemplated with the exception of a crane. Henry R. Micks is president and L. Rumsey Sanford, secretary.

The Macbeth Iron Co., Cleveland, manufacturer of blowing engines, heavy machinery, etc., has purchased a tract of 10 acres of land at West Madison avenue and Berea road. Though the company has no definite plans yet at hand, it is very likely that it will erect a new plant on the site some time in the future and move from its present location on West Center avenue. The company acquired the land at this time because of a favorable opportunity.

Plans are being prepared by the Ralston Steel Car Co., Columbus, O., for the erection of another large structural steel building at its plant. This building will be 100 x 200 feet and will be used for the manufacture of the company's patent steel underframes. The orders for this class of work have become so heavy that the present facilities of the company are inadequate to supply the demand. The company also expects to erect an office building soon on ground recently purchased at the plant, to be occupied by its general offices. The company now has 25 acres of land of which six acres are covered by building. It operates five miles of railroad track and employs over 1,000 men.

The Gilbert Hunt Co., Spokane, Wash., which recently took over the Spokane Harvester Co. and the Modern Mfg. Co., will erect a manufacturing plant. The building will be of brick and concrete, 150 x 800 feet, and will be one of the largest establishments of the kind in the northwest. The cost, together with the equipment to be installed, will approximate $100,000. The incorporators are: Gilbert Hunt, of Walla Walla; John A. Lewes, of Rockford, Ill.; A. L. Wright, of Spokane, manager of the Bradley Engineering Co., and formerly with Jones & Laughlin Steel Co., of Chicago; Samuel R. Stern, of Spokane; W. D. Walters and W. S. McCalley. John A. Lewes will be manager of the concern, which will manufacture agricultural implements.

Though the drawings have not yet been perfected, the plant which H. L. Gilman & Co., 32 Linden street, Brooklyn, Mass., engineers and architects, propose to erect will include a steel and possibly an iron foundry and also a structural steel plant. The foundry will be utilized for the production of castings for building construction and patent shafting and other hangers for attaching to reinforced concrete beams and ceilings. The structural shop is intended to produce building reinforcement for the company's new system of reinforced concrete construction which consists chiefly of light structural steel. This shop is to be semi-portable, permitting it to be set up in the field, as the company only takes large contracts. At present it has a contract with the Boston Factory Building Trust for buildings aggregating over 2,000,000 square feet of floor space.

General Industrial Notes:—

The Lorain Casting Co., Lorain, O., has increased its capital stock from $60,000 to $100,000.

The Browning Engineering Co., Cleveland, has filed a notice with the secretary of the state of Ohio increasing its capital stock from $500,000 to $850,000.

The Hoosier Drill Co., Richmond, Ind., has erected a very complete foundry of twice the floor space of its former plant and now has it in operation.

The Parrish Alford Fence & Machine Co., Knightstown, Ind., has increased its capital from $25,000 to $75,000. William H. Alford is president of the company and Richard H. Schweitzer is secretary.

The Mississippi Cotton Harvester Co., Greenville, Miss., recently incorporated, has organized by the election of Harman Cohn, president; G. H. Zempter, vice president, and Jule F. Witney, secretary and treasurer.

The Columbia Metal Supply Co., 247 Van Brunt street, Brooklyn, recently organized, will manufacture tin roofing caps, stamped metal goods of all varieties, light machine work for special purposes and dies for metal novelties.

At the annual meeting of the stockholders of the American Automatic Switch Co., Chicago, the board of directors was reduced from eleven to five members. The directorate as now constituted includes Ray V. Collins, J. Roosevelt, Shanley William Church Osborne, Ralph Sauger and I. B. Weisbrodt.

At the special meeting of the directors of the Joseph Dixon Crucible Co., Jersey City, N. J., held May 31, to take action on the death of Vice President and Treasurer John A. Walker, George T. Smith was elected vice president, George E. Long, treasurer and Harry Dailey, director and secretary.

The Republic Construction Co., Cleveland, has changed its name to the Republic Structural Iron Works Co., because the latter title has been deemed more appropriate to the company's work. The company is now operating a plant on East Fifty-third street, manufacturing structural steel, and no changes are contemplated.

The Bonny-Floyd Steel Castings Co., Columbus, O., which was incorporated several months ago, will commence operation in its new plant in that city, July 20. One of the large buildings has been completed and the machinery is being installed. The company will manufacture small and medium sized castings.

Edmund Cavanaugh has purchased the old rolling mill property near Springfield, Ill., from the Republic Iron & Steel Co. It is stipulated in the deed that the buildings are not to be used for rolling mill purposes for a period of 10 years. The tract consists of 49 acres. Mr. Cavanaugh bought the property for an investment.

The Ajax Grapple Hook Co., recently incorporated, will have its main office at 136 Liberty street, New York, where Newton R. Marvin, proprietor of the Ajax Foundry & Machine Co., will be its president and general manager. The company at the beginning will not have a plant of its own, but will have its grapple locks manufactured by others.

The Columbus Forge & Iron Co., Columbus, O., is engaged in making extensive improvements at its plant. In order to make the improvements the capital stock of the company was increased from $125,000 to $200,000, last week. The principal improvements are being made in the drop forge department where a great deal of new machinery is being installed.

The corporate name of the Bollinger & Reiley Machine Co., Cleveland, has been changed to the Cleveland Ice Machine Co., owing to the retirement of Henry Bollinger, whose interest was purchased several months ago by F. E. Wright, now president of the company. No changes are in contemplation for the plant which is now being operated on Merwin avenue.

J. Warner, president of the Empire Iron & Steel Co., Niles, O., has purchased an interest in the Eller Mfg. Co., Canton, O., manufacturer of steel roofing, metal ceiling, etc., and has become president of the concern. John F. O'Dea, of Canton, has been made secretary and treasurer of the

company in charge of the work. The business will be continued as in the past and no changes are contemplated.

The West Virginia Rail Co., Huntington, W. Va., recently organized by J. S. Ralston, E. N. Huggins and H. A. Zellar, of Columbus, O., and A. W. Weringer, L. A. Pollock and George J. Comas, of Huntington, has purchased the rail mill formerly owned by the Union Rail Co., of Huntington, and will manufacture light steel rails. The selling agent will be the Joseph Schoenthal Iron Co., Columbus, which will also buy and sell all the raw material to the mill.

Trade Notes:—

The Pittsburg Automatic Vise & Tool Co., Pittsburg, manufacturer of vises, has recently placed its St. Louis business in the hands of the Southwestern Engineering & Supply Co., of that city.

The Case Mfg. Co., Columbus, O., has just made a shipment of two 75-ton electric cranes to the General Electric Co. to be installed in the plant of the latter company at Schenectady, N. Y.

The general offices of the Illinois Steel Co., the Indiana Steel Co. and the Gary Land Co. have been removed from "The Rookery" to the Commercial National Bank building, northeast corner Adams and Clark streets, Chicago.

Arthur E. Merkel, M. E., who has been engaged in the practice of patent soliciting and experting in Cleveland for the past 11 years, announces that he has opened an office at 404 Century building, and has associated with him as counsel Charles R. Miller, of the firm of Weed, Miller & Nason.

In the new pipe foundry of the United States Cast Iron Pipe & Foundry Co., Burlington, N. J., four 5-ton special electric Northern jib cranes have been installed, two of them of the column jib type and two of the transfer jib type. These cranes will assist the overhead traveling cranes, and they are of high speed design, especially suited to pipe foundry service. This company also installed a 20-ton electric Northern traveling crane.

Fires:—

The Reliance Boiler Works, Oshkosh, Wis., owned by E. R. Gustavus, suffered a loss of $3,000 by fire May 27.

Fire in the building occupied by the Manhattan Brass Works, 337-347 East Twenty-seventh street, Manhattan, N. Y., caused damage of about $100,000 May 25.

TRADE PUBLICATIONS.

Blowers.—The Connersville Blower Co., Connersville, Ind. Catalog No. 9. 6 x 9 inches. 48 pages. This catalog contains a synopsis of the points to be considered in selecting a blower and gives information concerning the internal construction of the Connersville blower. It presents various types and sizes of blowers, both steam and electric-driven for smelting furnaces, foundries and other purposes through a large range of types and sizes. It also lists gas exhausters, cycloidal pumps and vacuum pumps.

Pumps.—The Canton-Hughes Pump Co., Canton, O., is distributing a booklet, 6 x 3½ inches, illustrating various types of pumps made by this company, including boiler feed pumps, high duty pumping engines, ballast pumps, hydraulic pressure pumps and condenser and circulating pumps, car pumps, etc.

Fire Brick.—The Garden City Sand Co., Chicago, Ill. 28 pages. 4¼ x 7 inches. This describes various shapes and brands of fire brick and tile for cupolas, boiler settings, etc. It contains suggestions regarding the use of fire brick and presents tables of dimensions.

Boiler Lugs.—Jos. T. Ryerson & Son, Chicago, have issued bulletin No. 27, giving information regarding the design and strength of boiler lugs, together with the method of locating them on boilers. It describes and illustrates Best's patent pressed steel boiler lug, and gives some useful tables for lug users.

Fire Brick Drying.—The Green Fuel Economizer Co., Matteawan, N. Y. 16 pages. 6 x 9 inches. This pamphlet describes the different methods by which brick, tile and other ceramic products can be dried, and shows that a suitable system of artificial drying will greatly increase the yearly output of a brick plant, reducing the labor of handling and lessening the waste. It presents machinery built by the Green Fuel Economizer Co. accomplishing these results.

Hoisting Engines.—The Lidgerwood Mfg. Co., 96 Liberty street, New York, has issued an 8-page pamphlet, 8½ x 11½ inches, describing the Lidgerwood electric hoist. This is made for use with direct-current of 250 to 500 volts and in a number of sizes ranging in capacity from 300 to 7,000 pounds and in a number of styles ranging from the single drum to the triple drum and the Lidgerwood electric mast hoist.

Small Tools.—The Pratt & Whitney Co., Hartford, Conn. Catalog No. 4. 4¾ x 7¼ inches. 215 pages. This comprehensive catalog lists and illustrates a complete line of small tools, including hand tools and tools for use in connection with machines, taps, dies, reamers, milling cutters, counterbores, drills, couplings, lathe and planer tools, gages, etc., are described and illustrated, being presented in connection with tables of dimensions of the various sizes manufactured. The last 20 pages of the book are devoted to more or less useful tables, including metric conversion tables, drill sizes, tables of standard threads and standard tapers, wire gages, etc.

Wagons.—The Studebaker Mfg. Co., South Bend, Ind. Catalog No. 268. 8¾ x 7½ inches. Lists a number of types and sizes of wagons and carts of the dumping variety suitable for use around plants and for general cartage.

Steam Engines.—The Minneapolis Steel & Machinery Co., Minneapolis. Brochure No. 101. 6¼ x 9½ inches. This book is devoted to description of the Twin City Corliss engine built by the Minneapolis Steel & Machinery Co., and presents illustrations of the various parts, both by means of photographs and line drawings. It also presents illustrations of a number of completed installations. These engines are built in sizes ranging from 8 x 24 to 38 x 60 inches, developing an indicated horsepower non-condensing from 24 to 2,070.

Hoisting Machinery.—The General Pneumatic Tool Co., Montour Falls, N. Y. Bulletin No. 58. 9 x 11½ inches. 18 pages. This bulletin is devoted to electric traveling cranes and describes and illustrates the various parts, including trolleys, hoist gearing, load brake, drive gearing, bridge, bridge trucks, controllers, motors, etc.

Slag.—The Cleveland Furnace Co. has published an elaborately illustrated booklet concerning the slag for which it now has a large sale. The slag plant of the company has an average capacity of 250 yards per day. All the slag is poured molten on the pouring bank and is slowly cooled, then lifted by hand into wheel barrows and taken to the crushers. The best of the good hard slag is selected and put into the concrete crusher, and the porous slag is taken to the pulverizers for sand and roofing gravel. The different slag products are used for roofing, reinforced concrete construction, side walks, curbing, sewer pipe and other purposes.